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DETROIT

Air Conditioning & REFRIGERATION NEWS

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Air Conditioning By the Acre

Here's the First Story of World's Largest Plant Air Conditioning System, A 6,000-Ton Job For a 'Blacked Out' Aviation Plant

By F. O. JORDAN
Consulting Engineer-Air Conditioning Specialist, Detroit, Mich.

Exclusive!

Only a year ago the writer was accustomed to thinking of any air conditioning job in excess of 100 tons as a **big job.** But how this viewpoint has changed. After he started to engineer air conditioning into the world's largest (I think) aviation plant designed by Albert Kahn, Inc., Detroit's internationally renowned architect, for the Wright Aeronautical Corp. at Lockland, Ohio, he soon got so used to juggling load factors running into thousands of tons that a mere 100-ton job has dwindled to the same class with a domestic refrigerator.

When speaking of air conditioning installations, practice has been to measure dimensions in "square feet of floor space," or some such liliputian unit of measurement. But the figures get sort of "astronomical" when such triffling units of measurement are applied to this huge oasis of comfort in the mid-summer heat of Cincinnati's environs. Without exaggeration it is "air conditioning by the acre." There are approximately **35 air conditioned acres under one roof,** and this is only part of the air conditioned space.

Problems In Romance

There is a bit of romance connected with things of huge size—the romance of the vast and unfathomable. Unusual size creates unexpected problems too. I found them interesting. My purpose here is to paint a quick picture for the entertainment and edification of any who find such problems interesting too.

Should the entire plant be air conditioned? The thought was staggering. No such plant had ever been air conditioned before. But a new era in factory design was being ushered in by the hideous peculiarities of modern warfare.

In the bygone day of "peace on earth and goodwill toward men," it was not essential to conceal one's whereabouts from bomber's eyes in the silence of midnight skys in order to live. Factories could be built long and narrow, and were provided with opening sash in their walls to let the outside air sweep in over the workers and then rise by convection to carry away the heat and pass out through the open sash in the monitors. With nothing more than nature's air conditioning such buildings were at least **livable,** even if little more.

Of course, such conditions were not ideal even in the "good old days." Production always took a dive in the summer time. Workers suffered. Heat prostration was not uncommon. At the worst, production was suspended on especially torrid days.

Obviously such interference with production of defense machines is a serious matter, now that the aimless but happy democratic mode of life hangs in the balance. One school of thought said it could not be tolerated, that the supply of aircraft to crush

(Continued on Page 4, Column 1)

Set Own Curb On Time Sales, Industry Urged

Cooperation of Electrical Groups Asked To Frame Uniform Schedule

KANSAS CITY, Mo.—Cooperation of electrical associations in 26 different cities has been solicited by G. W. Weston, secretary-manager of the Electric Association of Kansas City, in an effort to have some sort of a uniform schedule of recommended time payment terms for appliance sales ready for presentation at the meeting on voluntary instalment selling control to be sponsored by the National Retail Credit Association Sept. 4 and 5 at the Stevens hotel in Chicago.

It is Mr. Weston's belief that electrical appliance merchants constitute the only group interested in instalment sales policies which has not been invited to participate in the conference, probably due to the fact that they have no centralized organization, and the letter which he has sent to the other associations was an effort to correct this situation.

The following recommended schedule of instalment terms, drawn up by Kansas City distributors and dealers at a special meeting July 15, has ben submitted by Mr. Weston as a possible basis for recommendations to be presented to the conference:

"Minimum down payment in all cases—10%.

"Maximum number of monthly payments: ranges, water heaters, dishwashers, and disposal units—36

(Concluded on Page 12, Column 2)

No Check On Credit Sales Included In Price Control Bill

WASHINGTON, D. C. — As the House Banking Committee started hearings this week on the Administration's bill designed to put legislative teeth into price control, House Republicans voiced demands that the law should include control of instalment buying and wages as well as permitting the President to establish price ceilings and control rents.

Despite President Roosevelt's recommendation, in a special message to Congress, that legislation include authority "to deal more extensively with excesses in the field of instalment credit," the bill submitted to the congressional bodies contained no such provisions. Speaker Rayburn, in denying rumors that a last-minute hitch had developed on the instal-

(Concluded on Page 12, Column 2)

Dallas Sales Run 42% Ahead of 1940

DALLAS, Tex.—Sales of household refrigerators by Dallas dealers rose to 1,121 units during June, to jump the total for the first six months of this year to 8,917, according to reports to Dallas Power & Light Co. This compares with 853 units last June and 6,276 in the first six months of 1940, putting this year's volume 42% up on last year's.

Washer sales this June totaled 443 units, against 355 in 1940, and ironer sales were 32 units, against 12 last year. Unit air conditioner sales, however, fell off to 13 units, against 19 last June, and attic ventilator

(Concluded on Page 3, Column 1)

New 10% Tax Affects Refrigerator Parts

WASHINGTON, D. C.—Component parts for refrigerating systems as well as the complete household, commercial, or air conditioning system containing such equipment are covered by the proposed 10% excise tax on refrigerators included in the defense tax measure approved Aug. 4 by the House. The tax is based on the manufacturers' sale price.

As reported in last week's NEWS, the base of the tax has been broadened to include principal types of commercial refrigerating equipment such as ice cream cabinets, food and beverage cases, water coolers, milk-cooler cabinets, and the like.

In addition, there are brought within the scope of the tax components of refrigerating apparatus such as compressors, condensers, evaporators, expansion units, absorbers, and controls. These parts, moreover, will be subject to tax regardless of their intended use, and cover installations in refrigerator cars, refrigerated ships, breweries, and cold storage warehouses in addi-

(Concluded on Page 12, Column 1)

OPM Places Copper Under 100% Priority Control

WASHINGTON, D. C. — No deliveries of refined copper can be made after Aug. 6 except upon specific directions of the Director of Priorities of the Office of Production Management, according to the terms of a new allocation order signed Aug. 2 which placed copper under full priority control.

Previously, non-defense orders could be filled after a stipulated amount of copper had been set aside for a pool and all defense deliveries had been met.

Inventory control is exercised by provisions prohibiting purchases of copper from dealers, and of copper alloys and copper products from any source, in excess of the amount

(Concluded on Page 12, Column 3)

Association Officials Hear Symposium On Priorities Red Tape

WASHINGTON, D. C.—Priorities red-tape was unravelled a bit for 500 trade association executives Friday, Aug. 1 at the Mayflower Hotel here. Led by E. R. Stettinius, Jr., Director of Priorities for OPM, a panel of OPM and OPACS officials attempted to trace a path through the labyrinthine maze of priorities administration.

Among those who spoke were John H. Martin, Larry J. Martin, Maurice Hecksher, Jeffrey Smith, Sidney Weinberg, and E. B. George of OPM, and Joseph Weiner of OPACS.

After OPACS has decided on the prorationing of materials for civilian use, it was reported at the meeting, OPM is to administer and enforce such rationing.

This "administration and enforcement" of OPACS priority decisions, it was admitted, does not yet have the "machinery" (men and office space) it needs. Hence, as in the case of the A-10 rating for refrigeration repair parts, the priority rating will be meaningless until more men are hired and office space found for them.

Establishing priorities for war uses and for civilian needs is a tremendous problem, and the system is being changed almost day-by-day as the difficulties of establishing and administering priorities develop.

On June 30, 1941, OPACS announced a civilian allocation program, PM 649, stating that "mate-

(Concluded on Page 12, Column 4)

Another Housing Project 'Goes Begging' For Bids

NEWARK, N. J.—A call by the Newark Housing Authority to receive bids Aug. 1 on 702 refrigerators for two projects brought no response whatever. Neil J. Convery, executive director, attributed the failure to receive any bids to reluctance of manufacturers to make time contracts without priorities.

Pig Iron Priorities Set Up By OPM

WASHINGTON, D. C.—The long-expected priority control over pig iron was put into effect on Aug. 1 under Preference Order M-17 issued by the Office of Production Management Priorities Division. The new order assures foundries getting enough pig iron to produce their defense orders for castings and other products, and regulates the distribution of pig iron among steel plants so they can fill their defense orders.

While the order does not constitute additional priority control of steel, already subject to three kinds of control, it does control the pig iron which is the major part of steel. Steel is now produced with 56% pig iron and 44% scrap steel.

Under the order, a further step by the Priorities Division to make sure that iron and steel products will flow promptly through defense channels, all defense orders carry a preference rating of A-10 unless higher ratings are assigned.

(Concluded on Page 12, Column 3)

MKB Plans Intensified Drives This Fall

NEW YORK CITY—While housewives are being told by Modern Kitchen Bureau this fall that "The Switch Is On — Cooking's Going Electric—Change Now to a Modern Electric Range!" Donald Duck will be "quarterbacking" a football team toward the goalposts, representing a new record in water heater sales.

Increasing its national advertising on electric ranges, MKB has scheduled a campaign in five magazines—"McCall's," "Good Housekeeping," "Ladies' Home Journal," "Woman's Home Companion," and "Better Homes & Gardens." As a continuation of this year's advertising campaign theme, "The Switch Is to Switches Again," the bureau has prepared a new advertisement in color for the fall drive.

The new advertisement shows an 1890 couple being surprised as a

(Concluded on Page 3, Column 1)

96 Firms Sign For All-Industry Exhibit Space

Reservations Running 2 Months Ahead of 1940's Pace

CHICAGO — Coincident with the release this week of the list of 96 companies which have taken space in the Fourth (1942) All-Industry Refrigeration and Air Conditioning Exhibition, Charles H. Benson, advertising manager, The Imperial Brass Mfg. Co., Chicago, and chairman of the Exhibition Committee, reports that reservations of space and other pre-exhibit activities are nearly two months ahead of last year's schedule.

A complete list of exhibitors and the space they will occupy will appear in next week's issue of the NEWS.

More exhibitor companies as of Aug. 1 are under contract for display space in the All-Industry Show next January than had taken space on Nov. 1 last fall for the Third All-Industry Exhibition held in Chicago this last January. Due to the larger amount of space being taken by many of the exhibitor companies for next January over that used for the All-Industry Show this year, even a larger percentage of the available space is now under contract than was at the close of October last fall.

An interesting trend this year as compared to last, according to Chairman Benson, is the number of exhibitor firms which have transferred from their originally assigned space

(Concluded on Page 12, Column 5)

Industry Promised Chlorine Supplies Under Priorities

WASHINGTON, D. C.—Chlorine was placed under full priority control last week in a General Preference Order signed by E. R. Stettinius, Jr., Director of Priorities of the Office of Production Management.

However, allocation of supplies of chlorine adequate to take care of requirements in seven essential public services and industries, including refrigeration, was ordered by the Civilian Allocation Division of the Office of Price Administration and Civilian Supply.

The civilian allocation program covers refrigerant gases for existing equipment, water purification, sewage treatment, sanitation, slime control in industrial plants, preparation of products for medicinal use, and preservation and processing of food products.

The OPM order requires that defense orders for this important

(Concluded on Page 12, Column 1)

June Range Shipments Double 1940 Mark

NEW YORK CITY—Electric range shipments increased 105% during June, totaling 68,628 units as compared with 33,403 in the same month of last year, according to reports of 18 manufacturers to National Electrical Manufacturers Association. This is the highest comparative gain in shipments to be registered this year.

Shipments for the first six months of the year totaled 363,633 units, a gain of 59% over the 228,730 units reported for the same 1940 period.

Time To 'Sell Up' Is Now, Declares Bratten, Who Illustrates Sales Point In Improved Refrigerator Values

DAYTON, Ohio—With the "silk shirt and champagne" era of the first World War apparently being passed over in favor of the purchase of more tangible, useful things, the refrigeration salesman is faced with an enviable opportunity toward "selling up" to the higher-priced models in his company's line, believes P. M. Bratten, general sales manager of Frigidaire's appliance division.

Proof of the fact that people today are putting their money into tangible things, said Mr. Bratten, is information on home building, which shows that more than three times as many residential buildings were constructed in the first three months of 1941 as in the first six months of 1937. Frigidaire's record of 500,000 refrigerators sold in the first half of 1941 is additional proof of this new purchasing trend, he declared.

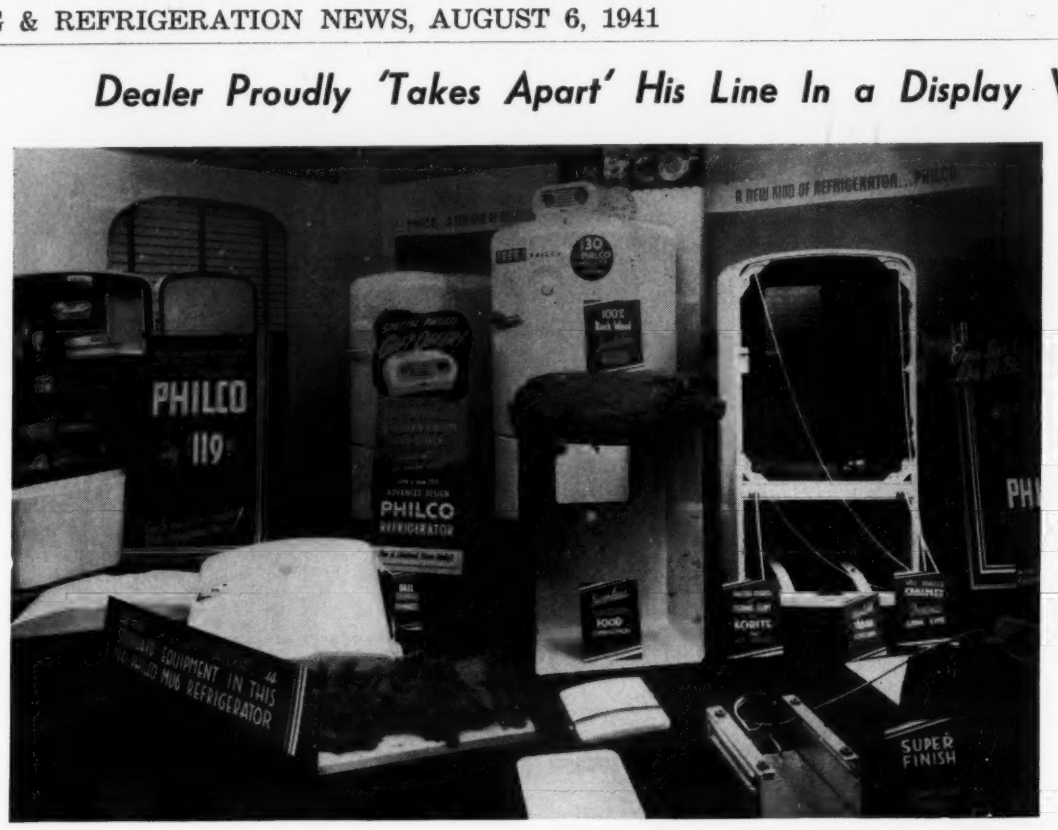
As an indication that people also are buying better quality products, Mr. Bratten declared that sales of Frigidaire's higher-priced Cold Wall and all-porcelain models have increased at more than three times the rate of other models in the line.

An easy mark for all household appliance salesmen to shoot at, said Mr. Bratten, would be to make every other sale a better model. Comparing the present market with that of 1937, when economic conditions were not as good as they are today, he pointed out that 75% of Frigidaire's sales in that year were in the price range of today's better models. And today the refrigerator buyer gets a great deal more for his money than he did in 1937. For example, said Mr. Bratten:

Frigidaire models LP-6 in 1941 and DRS-5 in 1937 are approximately the same in price. Yet this year's model is 6.9 cu. ft. in size as compared to 5.1 cu. ft. for model DRS-5; it has 13.5 sq. ft. of shelf space instead of 10.7 sq. ft.; a one-piece all-steel cabinet instead of a cabinet with separate apron and top; all-porcelain finish instead of Dulux; a glass-topped sliding hydrator rather than a porcelain-topped set-in type; a covered cold storage tray rather than a conventional drip tray; it gives 8 lbs. of ice instead of 6 lbs.; it has a double-width instead of single-width freezer; it has a utility storage bin whereas the 1937 model had none; and its Meter-Miser is of 1/6 hp. instead of 1/12.

Another thing—when a customer walks into the store, it makes no difference as far as advertising and promotional expense and cost for rent, insurance, heat, delivery, etc. are concerned, whether he or she buys a higher or lower priced model. However, the salesman earns at least 14% more on the average step-up sales, Mr. Bratten pointed out.

Dealer Proudly 'Takes Apart' His Line In a Display Window



A dealer display that packs a real punch and tells an "all out" story is this array of the parts and pieces of a Philco household electric refrigerator, all nicely labeled, which was created by the Alt Furniture Co. of St. Louis. "Ever Seen Anything Like It Before?" one display card proudly asks.

Oil Burner Industry Prepares To Meet Probable 25% Cut

NEW YORK CITY—Although details of the program have not yet been worked out, a reduction of 20 to 25% in production of oil heating units will soon be ordered by the Office of Production Management, it was predicted by W. A. Mathison, vice president of Williams Oil-O-Matic Heating Corp., before a recent eastern divisional sales meeting of 150 dealers from New York, New Jersey, and Connecticut at the Hotel Astor.

Conferences in Washington have indicated that such a reduction is inevitable, Mr. Mathison said, but he declared that efforts were now being made to hold the cut to the minimum consistent with national defense. Mr. Mathison coupled his prediction with a warning to those dealers whose inventories are low to act accordingly.

Several executives outlined Oil-O-Matic's current merchandising plan based on wide publicizing of the necessity for saving oil through use of efficient oil-heating equipment. Possibility of oil shortages should not be allowed to reduce sales, dealers were told, but should be capitalized on by emphasizing the oil-saving features of their equipment. Promotions based on scientific check-ups of current equipment as a part of the "War on Waste" campaign will play a major part in this season's sales activities.

An outline of the work the company is doing in the defense program by manufacturing parts for anti-aircraft guns was given by Mr. Mathison, who urged dealers to promote this angle as a demonstration of the efficiency of the firm's line.

How To Get Rid of a Carload of Ranges

GREENSBURG, Pa.—By ordering the first carload of electric ranges ever shipped to Greensburg, Paul Andrews, manager of the Andrews Home Appliance Co. here, started his salesmen off on a one-month sales campaign that ended in the disposal of 76 electric ranges.

Obtaining a special deal on several 1940 Kelvinator models, Mr. Andrews backed up his salesmen with 650 inches of newspaper advertising, two spot announcements daily over radio station WHJB, and 10,000 rotogravure pieces.

As additional incentive for them, he held a "dress up" contest, out of which each man earned at least a new suit of clothes. A punchboard also paid salesmen from $1 to $5 on every sale.

Buffalo Division Office Opened By Eureka

BUFFALO — Eureka Vacuum Cleaner Co. has opened a new divisional office at 744 Main St. here under the supervision of E. E. Sullivan, and with Joseph Morasi as service manager.

Multiplicity of Plastic Parts Scheduled For Use In 1942 Model Refrigerators

WILMINGTON, Del.—Electric refrigerators in 1942 will have more than 50 plastic parts, predict engineers of the larger refrigerator manufacturers in a survey by the plastics department of the Du Pont company.

A composite 1941 electric refrigerator has some 39 plastic parts and more than 77 possible plastic applications, the survey reveals. Refrigerator and plastics engineers already have developed a number of new plastic parts for 1942 models.

Their insulating value, economy, durability, beauty, resistance to rust in a humid atmosphere, and resistance to water make plastic materials particularly adaptable to electric refrigerators, engineers say.

Plastics have been used on refrigerators up to now because of their own superior properties, engineers say, but the scarcity of aluminum, stainless steel, brass, and other materials, because of the defense program, will accelerate the application of plastics on 1942 refrigerators insofar as the supply of plastics will permit.

Plastic parts on a refrigerator vary from a shelf stud to the inner-door liner, from a corner trim piece to the evaporator frame. The evaporator frame on one 1941 model is said to be the largest plastic piece ever injection molded. It has 204 sq. in. of surface.

Twenty-six of the 39 plastic parts on a composite 1941 electric refrigerator are of thermoplastic materials; the other 13 are of thermosetting materials. Refrigerator engineers are enthusiastic about the acrylic resins, newest of the thermoplastic materials.

The acrylics, derived basically from coal, air, and water, are used extensively because of their crystal clarity, "light piping" qualities and their strength.

From these acrylics are fabricated crisper tray handles, defrost indicator lenses, evaporator doors, evaporator door panels and nameplates, meatkeeper handles, outside nameplates, storage bin knobs, and other parts of electric refrigerators.

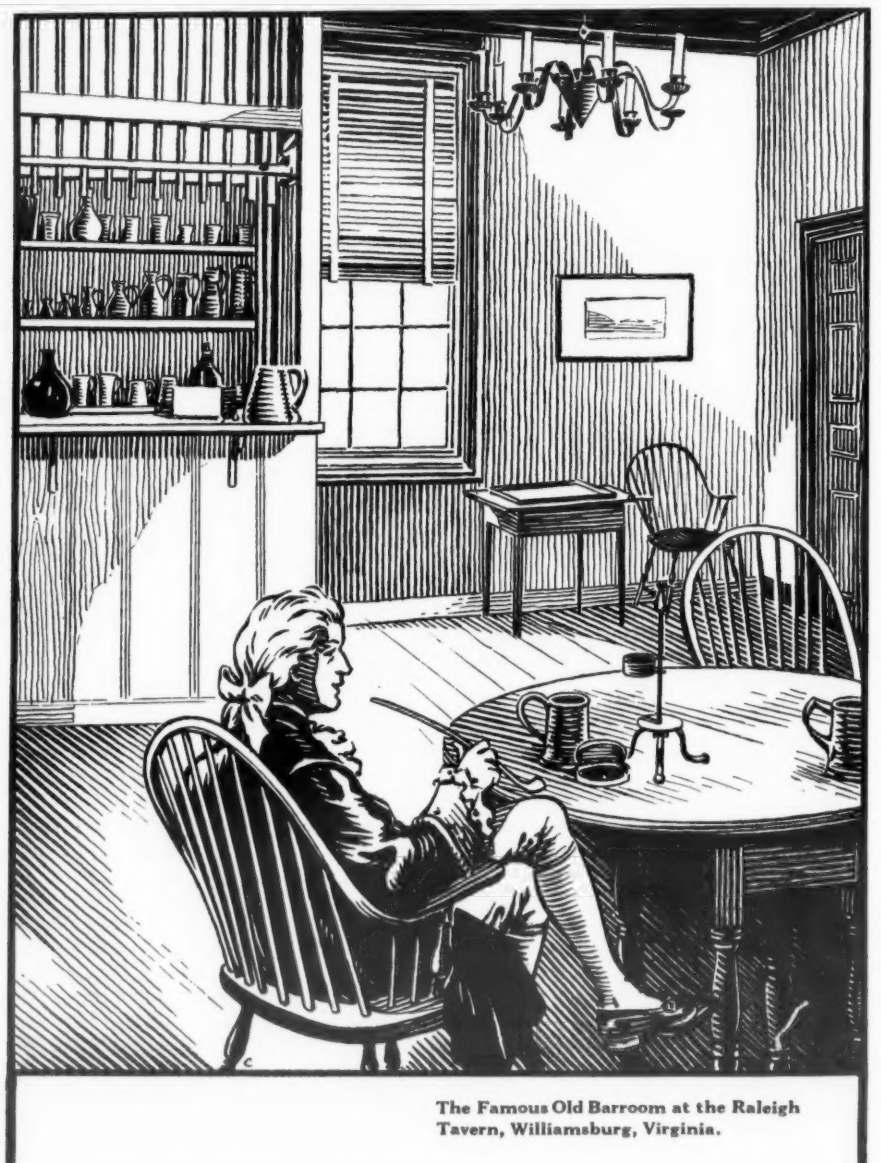
The cellulosic plastics, of which the basic ingredients are cotton linters or wood pulp, and the styrene resins, derived basically from coal tar, are the other thermoplastic materials used widely on refrigerators.

From these materials are made control knobs and wheels, corner trim pieces, crisper tray fronts and handles, drain tray handles, door handles, drip pans, evaporator frames, doors, door panels, handles and nameplates, and meatkeeper handles.

Also milk shelf handles, nameplates, shelf rack lugs, studs and supports; storage bin ornaments, temperature control unit knobs, thermometer housings and dials; and vegetable bin handles and fronts.

Houston Campaign Boosts Sales Pace 38% Over '40

HOUSTON, Tex. — Refrigerator sales during the first four weeks of the campaign being sponsored in this territory by Houston Light & Power Co. reached 2,430 units, to average more than 600 a week. Based on last year's average price in this area, $170, this represents a dollar volume of more than $400,000, and is 38% ahead of the same period in 1940.



The Famous Old Barroom at the Raleigh Tavern, Williamsburg, Virginia.

VIRGINIA—

"The Old Dominion"

The famous rendezvous of colonial days is symbolic of a great industry of today—beverage cooling.

Today, the universal and economical cooling of beverages is one more example of the social change made possible by refrigeration. Tons of "Virginia" Refrigerants serve this industry to provide *the "chill" that refreshes.*

BUY YOUR KINETIC'S FREON-12* VIA VIRGINIA *Reg. U. S. Pat. Off.

EXTRA DRY ESOTOO · Methylene Chloride · V-METH-L

VIRGINIA SMELTING CO.

Located at tidewater

WEST NORFOLK, VIRGINIA

V VIRGINIA

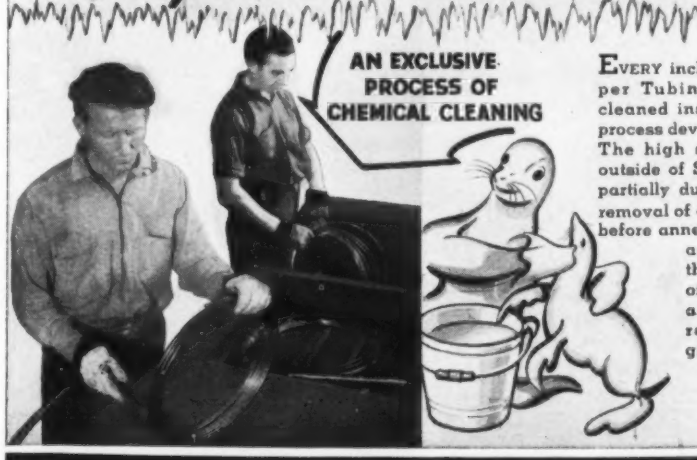
FROM ¼ to 25 TONS OF REFRIGERATION

Brunner Refrigerating and Air Conditioning equipment comprises air and water cooled condensing units for practically all types of commercial applications up to and including 25 tons of refrigeration. Catalog promptly on request. Brunner Manufacturing Co., Utica, N. Y., U. S. A.

BRUNNER

FOR YEARS THE SYMBOL OF QUALITY

Refrigeration COPPER TUBING—



EVERY inch of Superior Copper Tubing is chemically cleaned inside and out by process developed in our plant. The high sheen inside and outside of Superior Tubing is partially due to the thorough removal of drawing compound before annealing. Here is just another reason for the uniform quality of Superior Tubing as demanded by refrigeration engineers.

PENN BRASS & COPPER CO., INC.

POWELL AVE., ERIE, PENNA.

MKB Planning Bigger Fall Campaign on Ranges, Heaters

(Concluded from Page 1)

young miss flips on the new electric light. "Then lighting went electric," reads the caption. By way of comparison, the advertisement presents the electric cooking story by a similar photograph which shows a modern miss switching on the electric range as her delighted parents stand by. The caption is: "Now Cooking's Going Electric."

An innovation for electric range advertising helps to dealers and utilities is the radio transcription containing 16 one-minute dramatized announcements on the theme, "The Switch Is On." Each announcement is a story in verse and song with direct bids for action in buying electric ranges. Space is allowed for the dealer's signature by local announcers, and other copy. These transcriptions are available at $3.50 each.

Theme center of the fall promotion is an animated window display in which the analogy of electric light to electric cooking is dramatically presented by color enlargements of national advertisement photographs in which the electric light in the top illustration flashes on and off and a surface unit of the electric range in the bottom picture flashes on and off in red. The two are connected by a die-cut red arrow that flashes on and off, drawing the comparison of the electric light and the range close together.

Other materials available to dealers include specially prepared local newspaper advertisements, direct mail pieces, colored designs for billboards, car cards, truck banners, and a plan book completely describing the campaign.

The water heater drive this fall will cash in on the nation's favorite fall sport—football. Walt Disney's Donald Duck will again feature the bureau's sales campaign in posters and mailing pieces. The drive will be climaxed by a "football contest" for salesmen of utilities and dealers with prizes for the winners.

New promotion piece is a 4-foot display cut-out showing Donald Duck and his nephews racing for a touchdown carrying the "convenience," "comfort," "cleanliness," and "safety" of electric water heating as the football formations. "When low cost luxury is your goal, go electric," says Donald.

Four full-color counter cards are available for dealers, and can be used in window and floor displays competing for cash prizes offered by the bureau for the best water heater displays. Direct mail pieces in color include large self-mailers and smaller bill stuffers. Newspaper advertisements will be supplied to dealers. The bureau has prepared a new transcription of 16 radio spot announcements on water heaters.

Dallas Sales Gain 42% In 6 Months

(Concluded from Page 1)

sales to 88 units, against a high of 142 in June, 1940.

In the commercial field, water and beverage coolers paced June sales with 27 units, for a six months' total of 250, with refrigerators and display cases following with 13 sales in June and 131 for the half-year. Commercial air conditioning installations were 13 in June and 42 for the six months, while ice cream and frozen food cabinets had a half-year total of 34 sales.

Following are comparative household appliance sales for the six months of 1940 and 1941:

Refrigerators	8,917	6,276
Ranges	35	15
Radios	13,210	10,975
Roasters	536	448
Washers	2,277	1,767
Ironers	153	77
Dishwashers	22	13
Cleaners	3,948	3,134

Miles Moves To Obtain Improved Display

ENDICOTT, N. Y.—Lindy Miles Appliance Co. has moved from 2 Washington Ave. to 1504 North St., where improved display facilities for its line of radios, refrigerators, ranges, and washers are available.

Texas Salesmen Drill With Defense Guards

DALLAS, Tex.—Members of both the management and personnel of the Hart Furniture Co., appliance and radio dealership here, are active in the Texas Defense Guards, organized recently.

B. F. McLain, president of the company, is a major of the Defense Guards, in charge of the 19th Battalion. Hiram W. Cole, in charge of the firm's radio department, holds the rank of first lieutenant in the 29th Battalion.

Other members of the organization participating in the Defense Guards activities include privates Harold E. Marsh, Bill W. Davidson, Clarence Moore, Grayson Dyer, and Frank Dennis.

Officers give from 20 to 30 hours of their time per week, and all members drill from two to three nights weekly. Guards are taught military science and are given instruction and practice in the use of machine guns, tear gas, and rifles.

8 Coast Salesmen Win Chicago Trip

SAN FRANCISCO — Eight distributor salesmen from the Pacific Coast area have qualified for the trip east to Chicago for the annual meeting of the General Electric Sales Counselors Club on the basis of their showings during the first six months of 1941, reports Paul C. Wilmore, G-E refrigeration sales representative here.

Four of the men, E. R. Schaad, C. L. Tribble, J. P. Zeigler, and C. A. Stuewe, are from George Belsey Co., Ltd., Los Angeles; two, R. C. Kircher and E. N. Ames, are from G-E Supply Corp., San Francisco; and two more, R. W. Downing and G. L. Taafe, are from Valley Electric Supply Co., Fresno.

Mr. Schaad qualified for the trip in his second year with the Belsey organization, while Mr. Stuewe, who formerly was with G-E Supply in Kansas City, will be making his fifth trip to the meeting. Mr. Tribble and Mr. Zeigler also are repeaters.

In the San Francisco territory, Mr. Ames is making his second trip, having qualified last year on the basis of results in his territory from Sausalito to Crescent City. Mr. Kircher is a first-time winner, his territory being the state of Nevada.

Both Mr. Downing and Mr. Taafe are former trip-winners, the latter's record last year being among the seven best of G-E men in the country.

New San Diego Firm Formed By Woman

SAN DIEGO, Calif.—Mrs. J. M. Daniell is proprietor of the newly organized A A A Appliance Shop, 3616 46th St.

Farmers Hardware Takes on Complete Crosley Line

CLINTON, N. C.—Farmers Hardware & Supply Co. has entered the appliance merchandising field here with the complete Crosley line.

Armstrong Cork Wins Another Army Order

LANCASTER, Pa. — Armstrong Cork Co. has been awarded an Army contract for 1,000,000 37mm. brass shell casings. According to J. J. Fitzpatrick, head of the company's munitions division, the order will be filled in the closure plant here, where it is expected that a full production line, working three shifts and employing more than 200 persons, will be installed early next year.

Drees, Pioneer Appliance Dealer, Dies at 64

LITTLE ROCK, Ark. — Clemons John Drees, president and co-founder of the Arkansas Electric Co., Inc., died here recently. He was 64 years old. The Arkansas Electric Co. grew out of a partnership formed by Mr. Drees and the later N. W. Campbell in 1902. Mr. Drees leaves two brothers, a sister, and two nephews.

No "Blackouts" for MUELLER BRASS CO.

★ These are unusual times—anxious and trouble-some times for us all. The greatly increased consumer demand, together with the requirements of our National Defense Program, make it increasingly difficult for us to produce enough goods for our domestic customers, or to make timely delivery.

In an effort to do our best to satisfy the requirements of both our domestic customers and of the National Defense Program, we have been operating our plant three shifts per day, six days per week, since the summer of 1940—and we also work the seventh day of the week just as frequently as we possibly can. THERE HAVE BEEN NO "BLACKOUTS" AT THE MUELLER BRASS CO.

Many of our regular commercial customers as well as ourselves, are engaged in the manufacture of defense materials. It is only logical that they should look to us, their regular source of supply, to furnish them any fabricated Brass parts which they might require for the completion of their Defense schedule. This Defense work absorbs the larger share of our production.

Our regular domestic business is vital to us and we are making every possible effort to take care of it, but there is, however, several ways in which our customers can co-operate, which will not only help us, but will also facilitate delivery for themselves.

1. Please gauge your requirements and then order as far in advance as possible.
2. Send us a priority number whenever possible.
3. Use standard materials wherever you can.
4. Consult your source of supply if you have a problem. Substitution of a part for another at present unavailable, may be just as effective or may even IMPROVE the installation.

It must be remembered that the manufacturer in these changed times cannot function as a jobber to the degree he formerly did. All manufacturers are faced, in varying degrees, with mandatory priorities. We cannot always manufacture material in as great a quantity or ship it as quickly as we both would like to have it.

Defense of our country, our institutions and our way of life must necessarily come first, but we are doing our very best to take care of your requirements also. We all know we have a job to do and we will continue to do it to the very best of our ability.

Sincerely yours,
MUELLER BRASS CO.
By
President

Problem of Air Conditioning Bomb-Proof Plane Factory Solved By Unusual System

(Concluded from Page 1, Column 4)

"dictatorosis" must go on. But the old school still clung to tradition.

Then we got out the old "slip stick" and went a little deeper into thermal phenomena. Remember, this building could have no open windows. It must be sealed tight to prevent telltale light rays from beckoning on highflying night bombers—and destruction.

Calculations proved beyond the shadow of a doubt that the terrific power loading and the heavy occupancy concentration would combine with the intense sun striking down through the enormous roof expanse to shoot the inside temperature up above an obviously intolerable 140°. Not until then was it unanimously agreed that power over human health and comfort must be taken away from the age old jurisdiction of Nature and entrusted to Science instead.

More Problems

Having decided the workers' environment must be controlled by dependable means, the problem resolved itself into two major divisions.

First was the method and degree of comfort control justified for this particular installation both practically and economically. Second was the building construction and materials best suited for use considering both the cost of the materials themselves and the savings in air conditioning costs resulting from their use.

Since the degree of comfort possible to maintain depends to some extent on the method employed, these considerations cannot be disassociated. The methods considered were as follows:

Method "A"—Outside air change using mechanical supply and exhaust ventilators.

Method "B"—Outside air change using central systems.

Method "C"—Evaporative cooling using central systems.

Method "D"—Central systems with direct expansion cooling and steam heating.

Method "E"—Central systems with indirect cooling and hot water heating.

Comparison of Methods

About the best that can be done toward "comfort" by Methods "A" and "B" which are designed to carry away the internal heat of the building by pumping outside air through it is to prevent the breathing line temperature from rising more than around 5° above outside temperature. This condition is by no means intolerable if a lively movement of air is maintained, as it is not much worse than working outdoors in the shade with a breeze blowing.

Unless memory of barefooted days on the farm are all wrong, such working conditions are a lot more bearable than the ones we put up with in the average office and factory. Most of us, forced by economic necessity to literally "stick to the job" through mid-summer's deadening heat, make life less unbearable by dreams of sylvan nooks where breeze and shade unite to mark just about the same point on the "comfort chart in your ASHVE Guide represented by the condition maintained in the factory by the properly designed outside air change system.

The outside air quantity necessary to obtain this result is readily calculated on the basis of the heat to be carried out and by taking into account the increase in temperature with height above the floor due to stratification. It has been found safe to assume a rise in temperature of 1° per foot in buildings of this type.

The heat to be removed from the building by outside air change is equal to the heat input from sun effect, motors, occupants, illumination, etc., less the heat lost through the building construction due to the higher average temperature in the building. Knowing the quantity of heat to be removed and the temperature rise of the air in passing through the building, anyone can calculate the air change required with mathematical accuracy.

The advantages of Method "A" are low first cost, and the absence of ducts in the building. The chief disadvantage is that the air cannot be filtered because of the poor performance against the resistence of an effective air filter of the disc fans used in mechanical ventilators. With Method "B," the air can be filtered, and the same system may be used for heating merely by the addition of heating coils.

Since Methods "D" and "E" make use of refrigeration, they really are in a different class than the methods already discussed as they can maintain actual comfort by combined temperature and humidity reduction. Careful consideration of the many benefits to be derived from this single advantage finally decided the management to go for "all out" comfort and "shoot the works."

In comparing direct expansion and the indirect system, as many factors as possible were kept the same. The air handling systems were identical, and the conditions to be maintained were the same. Both were designed to take advantage of the economy offered by the use of "summer steam" generated by a steam plant that would otherwise have been practically idle.

To accomplish the latter, the compressors with the direct expansion system were to operate on electric power generated by a turbo-generator, whose cost was, of course, charged against this type of system, while the centrifugal compressors used with the indirect system were to be steam turbine driven.

With this arrangement, each system was equally "flexible" as each was divided into the same number of independently controlled zones. Each system had the same weakness against bombing attack, as a bomb placed in the boiler house would stop either. An obvious advantage of the indirect system is the absence of refrigerant in the work areas.

Every effort was made to find the true answer for this particular job.

In the end the "almighty dollar" had the last word. And this word tipped the scales of destiny toward the indirect system.

The Unorthodox Design

Back in the old air washer days air conditioning engineers got in the habit of operating their plants under "dewpoint" control. This method of control seems to be just sort of naturally suited to the air washer, and, of course, is essential to certain process jobs where the dewpoint temperature of the air is a dominant feature.

Under dewpoint control the refrigerating equipment is regulated to maintain some predetermined dewpoint temperature, or moisture content. This control does well enough so long as the sensible or cooling load is heavy enough (in "hot" weather, as the layman expresses it) because the sensible capacity of the plant is all used up "knocking down" the sensible load.

But with weather of moderate dry-bulb temperature along with high moisture content—comes trouble. Under this commonly encountered weather condition, the moderate cooling load simply is not big enough to use up the cooling work that must be done by the plant in order to reduce the dewpoint to the setting of the constant dewpoint control. To prevent "over cooling" of the conditioned space, or in other words, to avoid "freezing out" the occupants, some method of "backheating" must be employed.

If, however, you study the comfort chart in your ASHVE Guide, you find that the good old dry-bulb temperature has a lot more to do with feeling "hot" than dewpoint does.

If you look into the matter further you find it is the combined effect of temperature and dewpoint known as "effective temperature" that governs the human being's sensation of comfort insofar as it depends on the condition of his environmental atmosphere. Therefore, the only logical way to control a comfort job is by **effective temperature** control.

A number of effective temperature controls have been on the market for some time. Such controls have two elements, one a thermostatic element which reacts to dry-bulb temperature, and the other an element which reacts either to humidity or to wet-bulb temperature. The humidity sensitive element automatically sets the thermostatic element for lower dry-bulb temperatures upon rising humidity or dewpoint. These instruments are designed so they operate the air conditioning plant to maintain a constant effective temperature or a constant comfort condition.

Effective temperature control is used at the Lockland plant. Since its use eliminates the necessity of operating the cooling coils and the heating coils at the same time, only one coil is installed for each system. Refrigerated water is circulated through the coils in the summer for cooling and dehumidifying the air, and hot water is circulated through the same coils in the winter for heating the air.

In fact, the same coils, piping, pumps, and air distribution are used both for cooling and heating service. The saving in cost due to this design is one of the principal reasons why the indirect method was lower in first cost than the direct expansion method.

The System as Installed

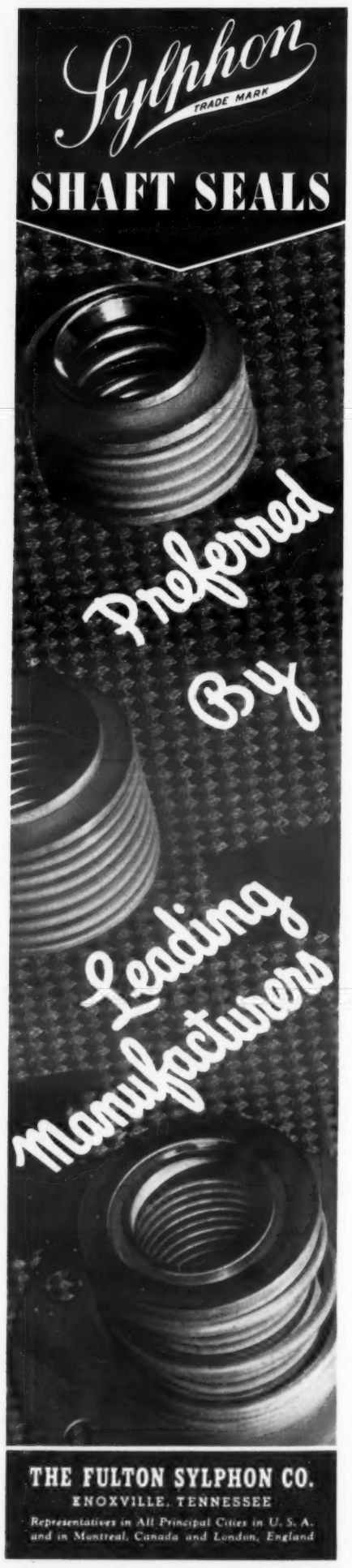
There are 70 central air conditioning systems located in the truss space over the manufacturing and assembly areas, so that each of them air conditions about one-half acre. Each system has its automatic air filter, combination heating and cooling coil, air circulating fan, and air distribution system.

These systems take in outside air and recirculated air in the proper proportions, heat or cool it according to the requirements of comfort as

(Concluded on Page 5, Column 1)

Engineer Who Designed The World's Biggest

F. O. JORDAN
Designer of the 6,000-ton air conditioning system in the new Wright airplane factory tells of some of the problems involved and their solutions in the accompanying article.



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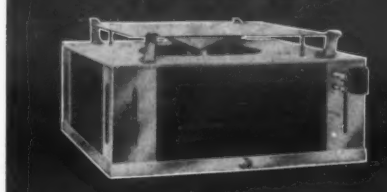

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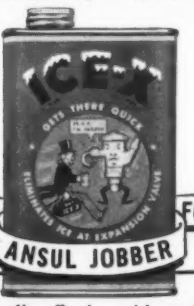

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Agents for Kinetic's "Freon-12"

70 Central Systems Provide All-Year Air Conditioning

(Concluded from Page 4, Column 5)

determined by the effective temperature controls, and distribute it evenly over the areas conditioned by them.

The water to be circulated through the coils is heated in the winter by means of surface type instantaneous heaters, and is cooled in the summer time by condensing steam turbine-driven centrifugal water cooling units located in a separate compressor house adjoining the boiler house. There are five of these water cooling units, each consisting of steam turbine, centrifugal compressor, steam condenser, refrigerant condenser, and water cooler.

Condenser cooling water is supplied from a cooling tower by cooling tower pumps through the refrigerant condenser and the steam condenser connected in series in the order named. Circulated pumps take the water from the heaters or the coolers as the case may be, and circulate it through the distributing system and the air conditioning coils.

The temperature at which the water is circulated to the air conditioning coils in the summer and the water temperature rise through the coils were given a careful study. Higher water temperatures from the coolers permit higher suction pressures for the compressors. This reduces the power consumption per ton of refrigerating effect, and more important in this case, it results in a greater tonnage from a compressor of any given size.

Likewise, a greater water temperature rise through the air conditioning coil reduces pipe and pump sizes and lowers pumping costs, but penalizes the air conditioning coil in the same way that high entering water temperature does. Therefore, water temperatures and water temperature rises must be very carefully selected so that "high side" is balanced against "low side" at the most efficient and economical point for the entire plant.

It was found that the same centrifugal compressors used on previous jobs at 1,000 tons would deliver 1,200 tons at 47° water off the cooler and a head pressure somewhat lower than usual. This meant that five units instead of six could carry the total load of 6,000 tons for the entire job.

With a calculated water temperature rise of 1° to the air conditioning coils, the temperature of the water available at the coils became 48°. Due to the high sensible to total load ratio resulting from the intense motor and sun loads, a standard coil four rows deep in direction of airflow was found to be just right for the job with water in at 48° and off at 60°.

This combination of temperatures was selected, as it resulted in the most economical combination of compressors, water coolers, air conditioning coils, and circulating pumps and piping. This is another reason for the lower cost of the indirect system on this particular installation.

For condenser cooling water a temperature "on" the tower of 107° and "off" the tower of 85° indicated an economical cooling tower design with a maximum wet-bulb temperature of 78°. The rise in water temperature of 22° through the condensers was obtained by passing the water first through the refrigerant and then through the steam condenser.

It should be noted that the condenser tubing is sized so all the water is passed through them and not partially bypassed as sometimes done. This arrangement results in the low head pressure required for obtaining the capacity of 1,200 tons.

Method of Control

Each of the 70 air conditioning systems is controlled as follows:

An effective temperature thermostat is located in the recirculated air intake for modulating the air bypass damper around the air conditioning coil toward "open" upon falling effective temperature returning from the conditioned space in the summer, and upon rising temperature in the winter.

A dry-bulb thermostat is located in the mixing chamber at the inlet side of the air conditioning coil modulating the outside air and recirculating dampers to prevent the mixture temperature from falling below 40° in the winter and from rising above 85° in the summer. This control also modulates vent dampers as required to relieve the air pressure in the building due to the outside air supply.

Water temperature will be controlled automatically summer and winter at the coolers and heaters respectively. Automatic seasonal change-over is provided also.

In cold weather the minimum of outside air is introduced as required for ventilation, and the heat input of each air conditioning coil is regulated according to the heat loss in the particular zone served by the coil.

As the temperature rises the proportion of outside air is increased until heating is no longer required. After this, the outside air damper remains fully open to cool the zone with outside air as long as the temperature of the outside air is low enough to offset the internal heat gain in the zone. Continued rise in temperature places the cooling cycle in operation, and modulates the outside air dampers toward the minimum setting required for ventilation in hot weather.

Any heat required at an exposed outside wall at the same time the internal heat load in other parts of the building demand cooling is taken care of automatically by thermostatically controlled unit heaters located near the outside walls.

Who Gets the Credit?

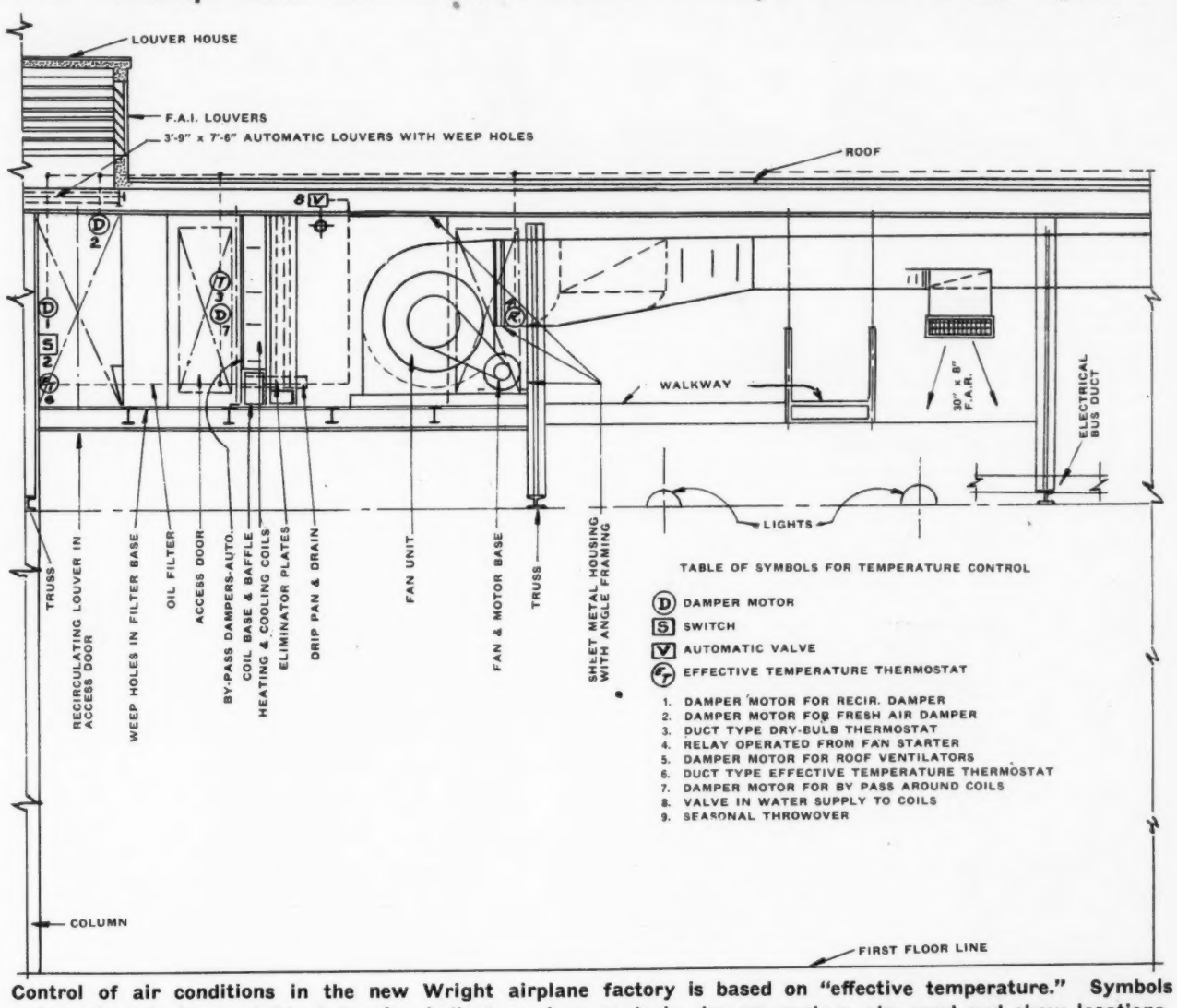
Albert Kahn, Inc. of Detroit were the designing architects and engineers, the Frank A. McBride Co. of Patterson, N. J. were the installing contractors, and the centrifugals were by Carrier Corp., the fans and air conditioning coils were by Sturtevant, controls were by Johnson Service, the pumps were by Buffalo, and the cooling tower was by Marley.

War and Air Conditioning

Is'nt it strange so horrible a thing as a war was required to bring air conditioning into its own? But then they say "necessity is the mother of invention."

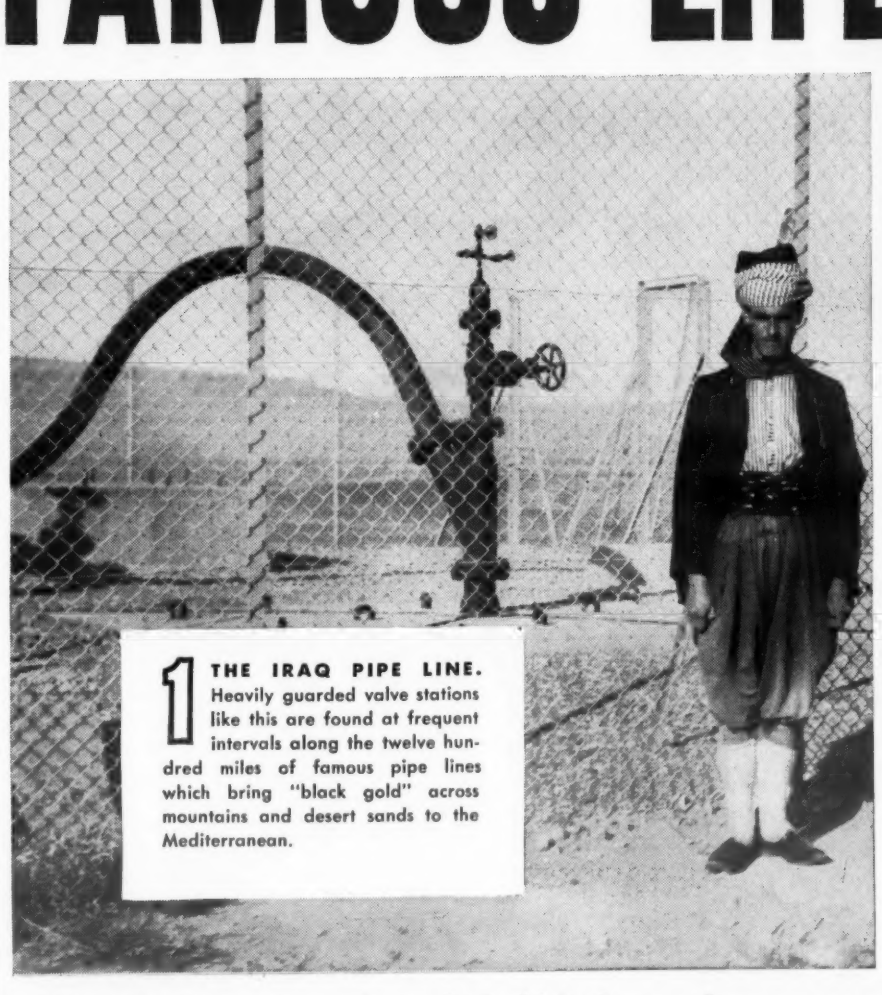
Even though war was the catalytic agent required to combine air conditioning and industry, their need for each other is so great war is unnecessary as a binder to keep them in combination.

70 Hookups Like This Control Plane Factory's Conditioning System



Control of air conditions in the new Wright airplane factory is based on "effective temperature." Symbols and numbers in lower right of drawing indicate various controls, damper motors, etc. used and show locations.

FAMOUS LIFE LINES



1 THE IRAQ PIPE LINE. Heavily guarded valve stations like this are found at frequent intervals along the twelve hundred miles of famous pipe lines which bring "black gold" across mountains and desert sands to the Mediterranean.

2 YOUR CAR'S BRAKE TUBES, life line of safe motoring, are made of Bundyweld Copper-coated Steel Tubing — standard throughout the automotive industry because of its great strength, ductility and resistance to vibration fatigue.

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OPM vs OPACS

EXECUTIVES of the industry are frankly puzzled as to what's going on down in Washington, and what's going to happen next. (That is no new state of affairs, incidentally.)

Chiefly, they wonder who's who down there.

Especially they want to know: Is OPM going to tell us what materials we can have and what our production rate will be, or is OPACS going to do it?

Where does one begin, and the other end?

Well, when the President set up the two agencies, OPM was supposed to allocate materials to "defense" industries. After they got through, OPACS was to pass around the remainder to "non-defense" industries. It was to be the job of the OPACS Solomons to study the various "non-defense" industries, decide which were "essential," and hand out the ration cards accordingly. Since then, there appears to have been a bit of overlapping.

NEW DEALERS IN ONE, BIG BUSINESS IN OTHER

As to personnel, Henderson's OPACS crowd is packed with New Dealers—learned professors and bright young men from the Eastern colleges. Knudsen's OPM is loaded with dollar-a-year-men — representatives of big business, mostly.

Strange as it may seem, the OPACS philosophy is more friendly to the "non-defense" industries than is the philosophy of OPM—despite Henderson's drastic curtailment orders. OPACS wants to see vast expansion in the nation's raw materials productive facilities—which would permit the refrigeration industry, for one, to go ahead almost as usual.

The OPM men, fearing after-the-war headaches from overexpansion now, want to take materials for rearmament away from "non-defense" production, instead of increasing productive capacity. They also want to get their job (rearmament) done. To them, despite their public reassurances to the contrary, "non-defense" production is their "competition."

By calling for sharp cuts in refrigerator and automobile production now, OPACS expects to raise such a howl from the nation that its major goal—the expansion of productive facilities for power and metals—will be demanded by an aroused citizenry.

The chief responsibility of OPACS is keeping prices down. It's their theory that if "non-defense" production can be maintained or even increased—so that there will be plenty of everything to go around — the nation's expanding purchasing power won't need to push prices up.

OPACS HAS A 'LARGER AIM'

If the number of refrigerators and other wanted items available to the public is inadequate for the demand next year, they foresee rising prices. It's the old law of supply and demand at work—a law which even the "emancipated" economists now admit is still in force.

So, they reason, if we curtail sharply *now,* so many people will be hurt—manufacturers, labor, retailers, consumers—that pressure will develop to increase the supply of steel, aluminum, electricity, etc.

In all this, OPACS has a "larger aim." Expanded productive facilities, they believe, will help to break up "monopolies," and the "power of intrenched wealth."

The OPM men have been given a job to do — the job of rearming America, Britain, China, South America, and all the world outside of Germany and Japan. That's a large order. They are not to be blamed if they concentrate on filling that order.

CANNOT ANTICIPATE END TO CONFUSION

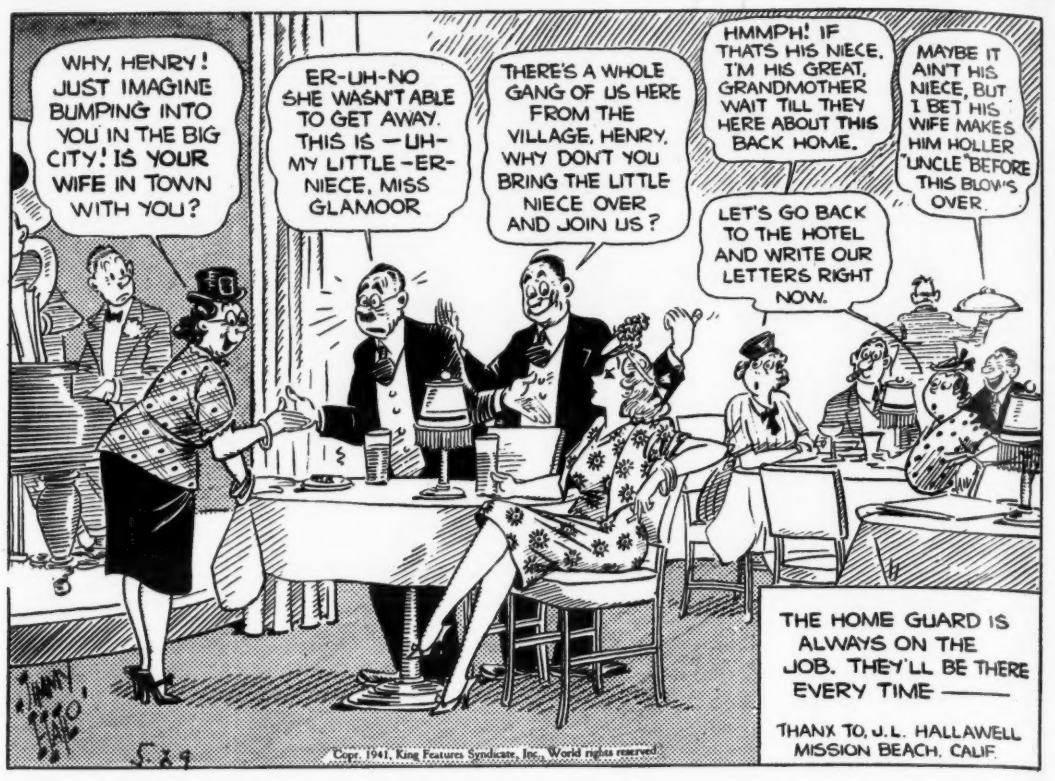
So, when the OPACS crowd decides that an industry (such as refrigeration) is vital to America, and orders high priority rating for it, OPM is in no particular hurry to set up the machinery for enforcing it. That's one reason why the A-10 priority rating for refrigeration "repair parts" doesn't mean anything concrete yet.

There are so many motives—open and hidden—in the interplay of action between OPM and OPACS that it's no wonder they get into each other's hair. Even if their jurisdiction wasn't in question, they just naturally wouldn't get along too well. They simply don't speak the same language.

Where will it all end? Well, Roosevelt never fires anybody, and he never steps into fights between his henchmen. He just appoints a new board, or a new "coordinator," or smiles broadly and tells the press that it will all work out all right in the end. That's what he is likely to do in this case. This probably will not resolve the dilemma; it may even add to the confusion.

As the weather man is predicting currently: "No relief in sight."

They'll Do It Every Time — By Jimmie Hatlo


WHY, HENRY! JUST IMAGINE BUMPING INTO YOU IN THE BIG CITY! IS YOUR WIFE IN TOWN WITH YOU?
ER-UH-NO SHE WASN'T ABLE TO GET AWAY. THIS IS — UH- MY LITTLE - ER- NIECE, MISS GLAMOOR
THERE'S A WHOLE GANG OF US HERE FROM THE VILLAGE, HENRY. WHY DON'T YOU BRING THE LITTLE NIECE OVER AND JOIN US?
HMMPH! IF THAT'S HIS NIECE, I'M HIS GREAT, GRANDMOTHER WAIT TILL THEY HERE ABOUT THIS BACK HOME.
MAYBE IT AIN'T HIS NIECE, BUT I BET HIS WIFE MAKES HIM HOLLER "UNCLE" BEFORE THIS BLOW'S OVER.
LET'S GO BACK TO THE HOTEL AND WRITE OUR LETTERS RIGHT NOW.
THE HOME GUARD IS ALWAYS ON THE JOB. THEY'LL BE THERE EVERY TIME ——
THANX TO, J. L. HALLAWELL MISSION BEACH, CALIF.
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LETTERS

DRAFTEE WANTS TO KEEP UP WITH THE INDUSTY

244th Coast Art. Battery G.
Camp Pendleton, Virginia Beach, Va.

Editor:

Due to circumstances (Army) beyond my control that cause moving from camp to camp, I would like to have my mailing address changed to Camp Pendleton, Battery G. 244th Coast Artillery, Virginia Beach, Va.

As a subscriber to AIR CONDITIONING & REFRIGERATION NEWS for about 10 years and a service engineer for a little longer period of time I might say that although taken from this business (By Draft) for a year "or Longer" I do not intend to lag behind in the refrigeration industry. Your magazine will kep me informed of all that is going on.

We went on a four day bivouac last week and the refrigeration facilities were none to good. Ice being the refrigerating medium, it was packed over hind quarters of beef and when used it did not look any too good. Other meats and butter, etc. were kept packed in ice and water. Why not try to sell Uncle Sam some refrigerated trucks for these purposes? In your magazine a few weeks back you printed an article (Verbation) from an official statement by the Quartermaster Office about changing in certain camps refrigeration from ice to mechanical refrigeration. Is this work to be installed by contractors or by army men? I think that there are plenty service engineers in the army to handle this work. If it is to be done by army men I would like to know as then I would try to get a transfer to one these camps where this work is being done. I know it would make my year speed by a whole lot faster and also be a benefit to the Army.

Hoping that you may have some information on this matter that may be printed in your AIR CONDITIONING & REFRIGERATION NEWS or sent to me. I remain,

Yours sincerely,
CLARENCE J. HERSCHBOECK

'PLEASE SEND 3 COPIES OF THE NEW BOOK'

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PETE RITCHA,
General Manager

WATCH THE 'NEWS' FOR NEWS OF THE BIG SHOW

Electric Supply Co.
309 S. Phillips Ave.
Sioux Falls, S. D.

Editor:

Please send me any available information you may have on the air conditioning show to be held this year at Chicago. The date, and duration of exhibition. Thank you.

EARL F. JAMIESON,
Sales Manager

Answer: The exhibition to which you have reference is the All-Industry Refrigeration & Air Conditioning Exhibition which will be held next Jan. 12 through 15 at the Stevens Hotel, Chicago.

The show will last for four days and there will be conventions of several refrigeration and air conditioning associations held in conjunction with it. Last year nearly 10,000 people attended this show.

The exhibition is sponsored by the Refrigeration Equipment Manufacturers Association, 111 West Washington St., Chicago, and any information that you might want to obtain about the exhibition can be had from them. Write to R. J. McClure, Secretary.

AIR CONDITIONING & REFRIGERATION NEWS will report completely all further news and developments concerning this show.

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Editor:

Your recent issue of AIR CONDITIONING & REFRIGERATION NEWS concerning the information on the commercial refrigeration industry was indeed a contribution to the industry. I certainly did enjoy it and I know that everybody that receives your fine paper profited very much by it.

As a distributor of commercial refrigeration, I want you to know that we take our place with the many other distributors who appreciate the service you are rendering to our industry.

PAUL D. HUTCHINS,
Mechandise Department

'THINK YOU DID A NOBLE JOB'

Utilities Engineering Institute
1314 Belden Ave.
Chicago, Ill.

Editor:

Along with your many other readers I have carefully gone through the July 16 issue of AIR CONDITIONING & REFRIGERATION NEWS, and feel prompted to let you know that I think you have done a noble job of emphasizing the importance of commercial refrigeration in the present scheme of things.

I am not unaware either of the actual physical editorial problem that must have been involved in gathering, sorting, and charting the significant data in such a way as to incorporate it with a regular issue.

Altogether, you've done a fine job and one of which I am sure the industry as a whole will be appreciative.

E. P. SORENSEN,
President

'YOU HAVE OUR VOTE OF THANKS'

Spoehrer-Lange Co., Inc.
3723 Commonwealth Ave.
St. Louis, Mo.

Editor:

We congratulate you on the splendid job you did in the July 16 issue on presenting the story of commercial refrigeration. You performed an invaluable service to the industry in its attempt to convince OPACS of its importance to both the civilian and military needs of the country. The information you have gathered is certainly most comprehensive.

You have our vote of thanks for this fine appeal in behalf of the refrigeration industry.

H. F. SPOEHRER,
Vice President

'ABSTRACTS OF PATENTS VALUABLE TO US'

Koch Refrigerators
North Kansas. City, Mo.

Editor:

Since you have started again to publish abstracts of recent patents in your paper it has become much more valuable to us. We feel that the patent feature is a very important one and hope you will keep it up.

R. STARR,
Vice President

Use of Frozen Foods Must Be Growing

Recently established in Birmingham, suburb north of Detroit, this new outlet is handling Deepfreeze frozen food units. Lee D. Hanson, manager of Detroit's Deepfreeze branch, Everett Reed, retail sales manager of the branch, and Tom Reinholm, operator of the Birmingham store examine some frozen foods stored in one of the units.

• • •

Detroit 'Deepfreeze' Branch Proves Worth Of Widely Varied Merchandising Program

DETROIT—The local branch of the Deepfreeze division of Motor Products Corp., which originally was set up primarily as a research laboratory for experimentation in the merchandising of Deepfreeze units and also of frozen foods, has been converted, under the direction of Lee D. Hanson, new branch manager, into a hard-hitting, business-like sales organization which has retailed more than 100 Deepfreeze units since the first of March.

Mr. Hanson's policy of operating the branch boils down to simply this: "Get the sales first, then analyze the methods by which these sales were obtained and apply these methods to future selling efforts." He feels that this system precludes the wasting of time on aimless and fruitless "research," and that every sales technique developed in this way is one which already has proven successful.

The 100 sales made since Mr. Hanson took over management of the branch include single, double, and special units. These special units are those which are adapted to use in various industrial processes, rather than for food storage. Many of these units have been sold to Detroit firms, but because of the specialized nature of the orders they are all handled through the company's Chicago headquarters rather than the local branch.

The Detroit branch now operates as headquarters for the territory comprised of Michigan, Ohio, northern Indiana, and a few counties of Kentucky. The branch still handles the bulk of retail sales in the Detroit area, although the J. L. Hudson Co., downtown department store, has been enfranchised as a Deepfreeze dealer, and Tom Reinholm, formerly of the Kroger meat department, has been authorized to sell the units in suburban Birmingham. Everett Reed is retail sales manager for the branch.

Remainder of the territory is handled by distributors and dealers appointed by the Detroit branch. One of the newest of these distributors is Specialty Machines Corp. in Grand Rapids, Mich. William Matheson is president of this organization, and Walter Geistert is sales manager. The company handles Deepfreeze sales in 14 Michigan counties.

As an indication that widespread sale of the Deepfreeze units will help and not hinder locker plant development, Mr. Hanson points to the fact that Capitol City Locker Systems, Inc., Lansing, Mich. locker plant owned and operated by L. E. Knapp, is now serving as a Deepfreeze dealer in addition to its locker plant activities.

Original idea underlying the frozen food retailing activities of the local branch was that the store could serve as food purchasing headquarters for its Deepfreeze customers. The company carried large-size packages of all types of frozen foods, and sold these packages at economical prices to Deepfreeze owners who had a place to store these foods in quantity.

The branch still carries on this activity, but in addition it has widened its frozen food distribution facilities by making arrangements with some 12 or 15 stores located in strategically scattered sections of the metropolitan area to handle the larger packages of frozen foods expressly for the benefit of Deepfreeze owners. Mrs. Meda Randolph is food sales manager of the branch.

Two-Story Refrigerated Locker Plant Planned

DALLAS, Tex.—Plans to construct here a two-story frozen foods locker plant which may set a pattern for compactness are now being drafted by the staff of the Southern Refrigeration Co. headed by H. W. Cline.

The proposed plant will have a floor area of 55 by 40 feet. The 600 available lockers will be arranged in decks, for maximum compactness.

Another feature planned is a glass-enclosed display room, provided with 24-hour refrigeration service, for the merchandising of fruits and vegetables.

Reasons Given For Growth of Mexican Appliance Market

DETROIT—Expanding market for refrigeration will result from the improving trade relations between the United States and Mexico, believes Leland de Villafranca, Mexican representative for Norge Division, Borg-Warner Corp. and Borg-Warner International Corp., who visited Norge headquarters here recently.

During the past two years Mexico and the United States have developed friendly attitudes toward each other with the result that U. S. exports totaled as much as $96,000,000 for the first six months of this year, Mr. de Villafranca said. He attributes this improvement to the collaboration of Mexico's Secretary of State, Ezequiel Padilla, with the U. S. Secretary of State, Cordell Hull.

Possibilties for U. S. refrigeration firms are shown in the recent award to Norge of a contract to supply refrigerators and ranges for the new 152-unit apartment house in Mexico City, La Latino Americana, stated Mr. de Villafranca. Said to be the finest multiple dwelling in Latin America, La Latino Americana drew bids from Mexican import representatives of many countries.

Manufacturers of household refrigeration will benefit from the success the Mexican government is having in solving the problems of labor, Mr. de Villafranca believes. Solution of internal labor disturbances promotes an influx of capital from the U. S. to Mexico, assuring greater purchasing power and an increased demand for consumer goods by the laboring classes.

Lack of market for Mexican oil producers will not, as some believe, impoverish the nation, Mr. de Villefranca said. Mexico's rapid development of agriculture will more than offset any slackening in the oil market, in his opinion. Agriculture, he says, is the true pillar of Mexican prosperity, and is being strengthened by the government, which is developing irrigation projects.

Big Plant Is Started In La Crosse, Wis.

LA CROSSE, Wis.—Work has been started on a new cold storage locker plant here to be operated by the Polar Food Locker Co. The one-story structure is designed to accommodate 500 lockers, with room for expansion to 1,000. Each locker will have a capacity of from 250 to 300 lbs.

Shorthand Advertising Boosts Conditioning

PITTSBURGH — Air conditioning, the Army's "yoo hoo" incident, free meals, and good food were all tied together in a novel advertisement by Donahoe's cafeteria-restaurant directed at business girls. It was written in shorthand, and the first 20 girls who took a clearly typed copy to Donahoe's cashier were given a free meal.

"Yoo hoo, Girls!" the caption of the advertisement read. ". . . you have a chance to cool off . . . cafeteria is the place to cool off."

Evans Called To Service

YORK, Pa.—Albert C. Evans, who has been in charge of air conditioning sales promotion in the sales promotion division of York Ice Machinery Corp. for several years, has been called for service in the U. S. Army and is now stationed at Fort Belvoir, Va.

Latest Delicatessen Item--Hot Frosted Meals, Complete

BOSTON — "Hot-Frosted Foods" are a new innovation in the frosted food line developed by the famous Thompson's Spa here.

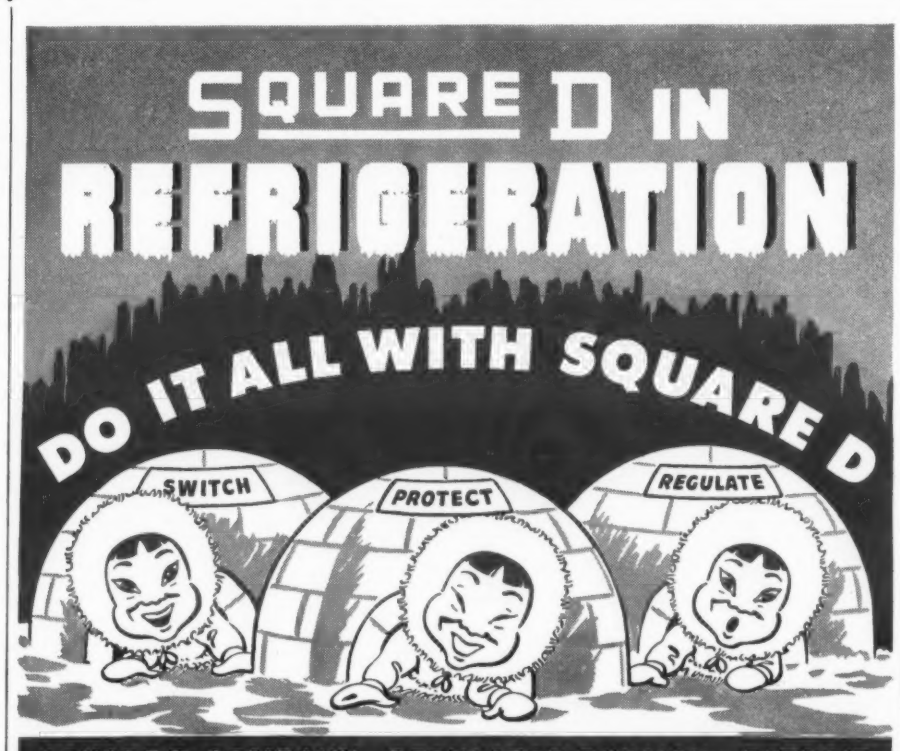
The dishes are cooked as for serving at the counters of the Thompson stores and then quick-frozen while still hot by a process which brings them down to freezing quickly. The customer receives the portions, regular counter-order size, in neat little flat pocket-size packages. On arrival at home, the customer simply pops them into a saucepan and they are hot again, ready to eat, in five minutes.

The quick-freezing process "suspends" the original freshness of each food, so that when heated, the result is the same as when first prepared.

Such items as pot roast of beef, leg of lamb, etc. are sold.

SQUARE D IN REFRIGERATION

DO IT ALL WITH SQUARE D



SQUARE D COMPANY • REGULATOR DIVISION • DETROIT

Getting quizzical about refrigerator sales...

1. What is this lady doing with her lipstick?
2. Do "cubic inches" mean much to a prospect?
3. What part of the refrigerator is a product of the same chemical research that developed such miracles as nylon—the man-made filament widely used today in making fine hosiery?
4. What part of the "DULUX" seal has the greatest influence on your prospective purchaser?
5. Which government agency recently "drafted" what metal used in a refrigerator part in the interests of national defense?
6. Do housewives want to hear about the gadgets on refrigerators?
7. What part of the refrigerator may help effect as much as 10% savings on the family's food bill?
8. For which of the following reasons does a "DULUX" finish influence prospects and help you *close a sale more quickly?*

Check

a. It stays white ..... ____
b. It's easy to clean ..... ____
c. It retains its gloss ..... ____
d. It resists chipping and cracking ..... ____
e. It resists stains of food and household grease .. ____
f. It's pre-tested for durability and long life ..... ____
g. It's made by Du Pont ..... ____

You'll find the answers on the following page

DU PONT DULUX FINISH ON EXTERIOR

DULUX DU PONT

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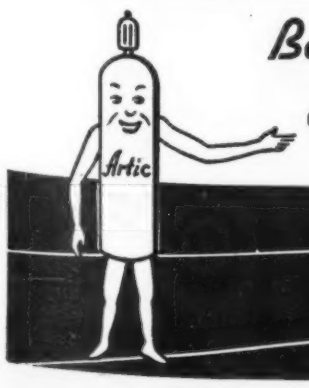

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Frankford P. O. Philadelphia, Pa.

Questions and Answers on Solutions and Coils In Freezing Plates

TABLE 1—CRYOHYDRATES

Freezing Temperature Degree F.	Percentage of Salt by Weight of Total Mix	Solution of Water and
plus 30.0°	4.9	Sodium Sulphate
plus 28.3°	6.5	Potassium Sulphate
plus 28.0°	8.0	Sodium Carbonate
plus 27.0°	10.0	Ammonium Perchlorate
plus 26.6°	11.5	Potassium Nitrate
plus 26.0°	9.5	Ammonium Bicarbonate
plus 12.8°	19.7	Potassium Chloride
plus 4.3°	19.1	Ammonium Chloride
plus 2.0°	42.8	Ammonium Nitrate
plus 0.6°	39.7	Sodium Nitrate
minus 6.0°	23.3	Sodium Chloride
minus 14.0°	41.5	Ammonium Thiocyanate
minus 15.0°	100 parts water	69 parts Cyanamide, 70 parts Urea
minus 32.0°	40.7	Ammonium Formate
minus 34.7°	35.5	Potassium Carbonate
minus 59.0°	29.5	Calcium Chloride
minus 60.4°	66.9	Glycerine
minus 94.0°	76.3	Ethyl Alcohol

* * *

By J. Askin, Chief Engineer, Fedders Mfg. Co.

Requests for information on freezing solutions have been sent to us periodically, and I am giving below some of the questions and answers.

(1) **Question:** What is a eutectic brine?

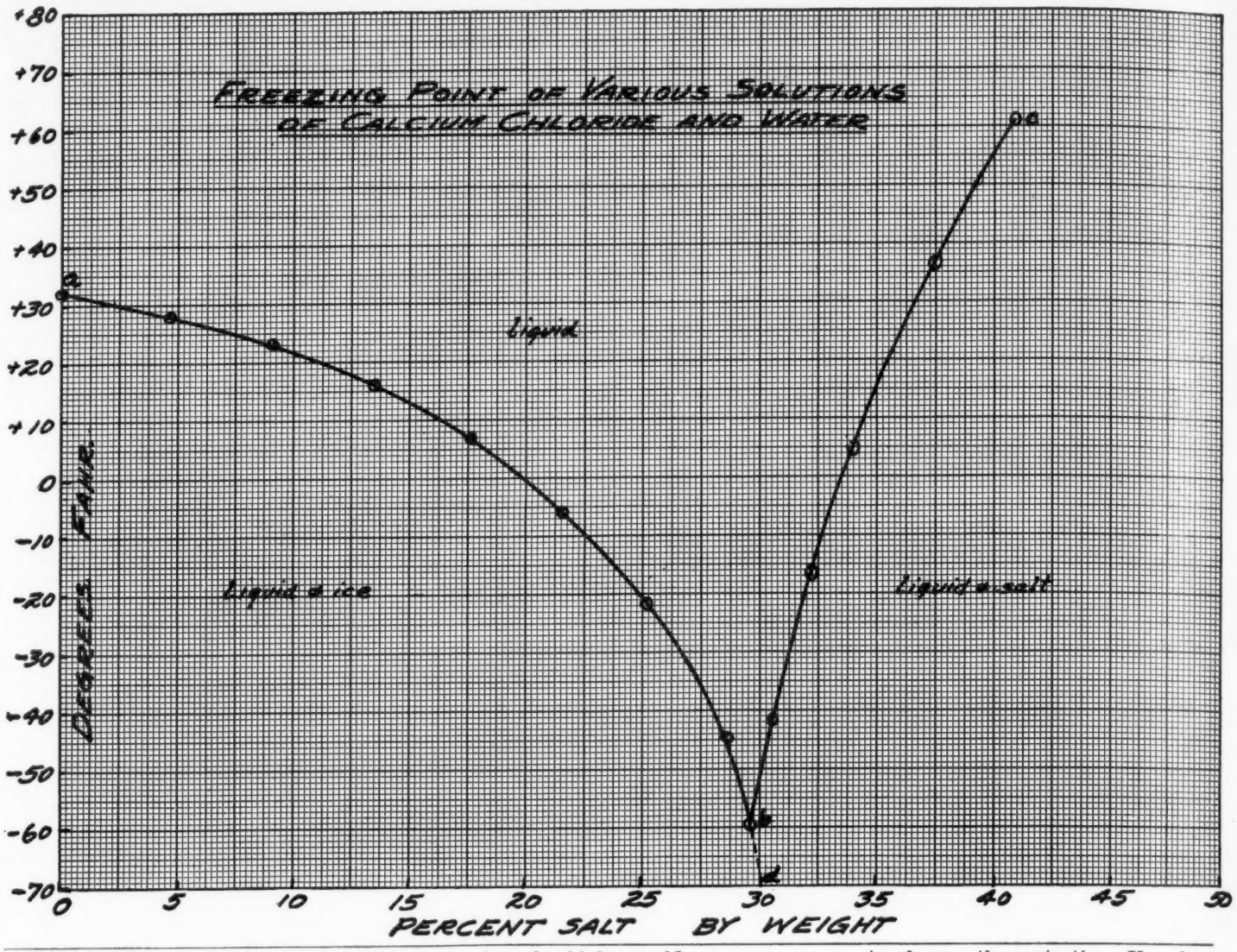
Answer: A eutectic brine may be made by mixing a salt with water. See Fig. 1. This chart shows the freezing point of various solutions of calcium chloride salt and water, for example. Water freezes at 32° F. (see point A). When salt is added the solution freezes at a lower temperature. The more salt in solution, the lower is the freezing temperature. A 10% solution freezes at plus 22° F. A 20% solution freezes at 0° F. A 29.5% solution freezes at minus 59° F. (see point B).

So far, from point A to point B the curve has been continuous with no breaks. You would expect this function to continue smoothly, so that a 30% solution would have a freezing point of minus 70° F. (see point D). This is not what happens, however. There is a sudden break in the curve; and the curve instead of continuing from point B to point D changes its direction and continues upward from point B to point C. And so, a 30% solution freezes at —52° F. instead of minus 70° F. As the salt concentration increases, the freezing temperature goes up and a 35% solution, for example, freezes at plus 15° F. The per cent solution of salt and water having the lowest freezing point (designated as point B in this illustration) is called a eutectic brine.

Going back to the previous paragraph where we stated that a 10% solution freezes at plus 22° F. and a 20% solution at 0° F., I meant to say that water begins to freeze out at these temperatures—the remainder of salt and water freezing only if the temperature should continue to be lowered toward the eutectic point. Otherwise, if the temperature is not lowered the salt and water does not freeze solid. In the range from point A to point B slush ice forms.

At point B the mixture freezes more suddenly and neither salt nor slush ice separate out.

What happens with the 35% solution which freezes at plus 15° F. (or any point between B and C? Salt starts to separate out at plus 15° F. The remainder of salt and water freezes if the temperature should continue to be lowered toward B, the eutectic point. Otherwise, if the temperature is not lowered the salt and water does not freeze solid.



(2) **Question:** What is a cryohydrate?

Answer: A cryohydrate is a eutectic solution.

(3) **Question:** What type of material should be used for the tanks in order to keep down corrosion?

Answer: It is common practice to use a lead coated steel or tinned copper for tank material.

(4) **Question:** Does any other material have to be added with the salt?

Answer: Yes. To avoid settling of the salt which may separate out of the solution, it is suggested that a small amount of starch, soluble oil, or gelatin be added. These materials keep the salt in colloidal suspension.

The soluble oil is the type used for lubricating of machined parts and tools during a cutting operation on a milling machine or drill press. This material serves another and as equally important purpose and that is that it coats the surface of the metal parts and helps keep them from corroding. The material may be purchased from H. A. Montgomery Co. of Detroit, Mich.

(5) **Question:** What type of refrigerant can be used in these coils?

Answer: Methyl chloride or "Freon-12" are usually used inside of these coils. In case of refrigerated trucks, the coils may be connected to circulating cold brine when the truck returns at night and the brine connections are broken in the morning, when the truck is ready to make the day's rounds. The cryohydrate will have frozen during the night. Of course, the cold brine circulating through the coil will have to be at a lower temperature than the freezing temperature of the cryohydrate. If calcium chloride is used for circulation in the coil, care should be taken to have the calcium neutralized with sodium dichromate or chromic acid.

Use .4 lb. of sodium dichromate for every 100 lbs. of calcium chloride or 1.2 lbs. sodium dichromate for every 100 lbs. of sodium chloride. These mixtures are the proper amounts for the eutectic solution only.

(6) **Question:** How much freezing solution will be necessary?

Answer: The amount of solution depends upon the cooling load requirements. The melting of 1 lb. of cryohydrate will be caused to the heat transfer of approximately 105 to 135 B.t.u., the exact amount depending upon the type of cryohydrate. The latent heat of fusion, as it is called, must be added to the heat necessary to warm the liquid to any temperature above the melting point of the cryohydrate at which it is desired to figure the load.

(7) **Question:** How much bare tubing should be used?

Answer: Figure on a heat transfer coefficient between the refrigerant in the tube and the eutectic brine surrounding the tube of 13.5 B.t.u. per hr. per °F. per sq. ft. surface.

(8) **Question:** What size tubing is used in Fedders bare tube coils?

Answer: ⅝ inch O.D. copper tubing is used. The tubes are joined to the return bends with silver solder and the coils are tested at 300 lbs. gauge pressure. The amount of surface is .164 sq. ft. per ft. length or 6.1 feet of tubing contains 1 sq. ft. of surface.

(9) **Question:** What temperature difference should be used?

Answer: That depends upon the size compressor and the time allowed to freeze the eutectic. Use from 5° to 15° F. temperature difference.

(10) **Question:** Are there any precautions to take in making the flat tanks?

Answer: Do not fill the tanks full. Allow for expansion when they freeze.

(11) **Question:** Are there any other eutectics in addition to calcium chloride and sodium chloride which may be used?

Answer: Yes. Not only are good cryohydrates formed from various salts dissolved in water, but some are made with a mixture of more than one salt, that is, two or more salts, dissolved in water. Table 1 shows a group of eutectic solutions, and the per cent salt required.

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Answers to the DuPont Quiz on preceding page

1. The lady has just been told that a "DULUX" Finish is easily cleaned. She wants to see for herself.

2. Yes—when translated into extra storage space and added convenience. Then any housewife will listen. Always know your "cubic inches."

3. The "DULUX" Finish. It's made by Du Pont—the same company that developed the nylon for beautiful hose which your prospect may be wearing while you talk to her.

4. The Du Pont Oval. America knows it as the symbol of "Better Things for Better Living . . . through Chemistry."

5. The Office of Production Management (OPM) recently "drafted" aluminum trays by giving priorities for this metal to national defense.

6. Yes—especially about gadgets which *help* them. Talking about an easy-opening latch or an ingenious ice cube remover will help you swing many a sale.

7. Insulation. A modern refrigerator can save up to 10%—the amount of weekly food spoilage often caused by poor insulation.

8. If you've checked every reason you're 100% right.

E. I. DU PONT DE NEMOURS & CO. (INC.), FINISHES DIV., WILMINGTON, DELAWARE

Servicing Ice Cream Cabinets and Other Low Temperature Equipment

By Arch Black and Dean C. Seitz

Editor's Note: This is the eleventh instalment of a new section on ice cream cabinet servicing in the series of articles which cover servicing of all types of low temperature refrigeration equipment for use in retail business.

Service Complaints

Service calls on ice cream cabinets using the automatic expansion valve system may be classified under the same general headings used previously for the discussion of the low side float system. Under each of these headings may be listed the various causes which may result in the condition described by the heading. A short discussion of the symptoms and remedies of each of the causes will be listed in the following paragraphs.

COMPLAINT No. 1—Ice cream too soft—Machine runs either normally or continuously.

Cause No. 1—Shortage of refrigerant.

The first step is to place gauges on both the high and low pressure sides of the system. A rapid drop in pressure in the low side when the liquid valve is closed at the receiver indicates a refrigerant shortage. At the same time the expansion valve will make a hissing noise.

The obvious remedy is to add the necessary amount of refrigerant to stop the hissing expansion valve. Never leave an installation on which it was necessary to add refrigerant without having located the cause of the shortage. If the cause is not found it is very likely that the point of leakage has not been corrected and the complaint will repeat.

Cause No. 2—Leaky expansion valve.

To check a system for a leaky expansion valve, pump the refrigerant charge back to the liquid receiver until the low pressure gauge reads approximately 20 inches vacuum. Then close the compressor discharge valve and stop the motor. Next open the liquid receiver outlet valve leading to the automatic expansion valve.

If the expansion valve does not leak, the pressure on the low side gauge will rise to 1 or 2 lbs. more than the pressure for which it was originally set. The pressure will not stay at this point for any period of time but will gradually rise, due to the heat which it is picking up in the evaporator.

If the expansion valve leaks, the pressure on the low side gauge will rapidly rise to many pounds more than that for which the automatic expansion valve was set.

Frequently the needle of the automatic expansion valve will be held slightly open by a small piece of dirt. Before changing the entire valve it is always advisable to try flushing in an attempt to remove the dirt. If flushing does not correct the trouble, it will be necessary to remove and replace the automatic expansion valve.

Cause No. 3—Stuck shut automatic expansion valve.

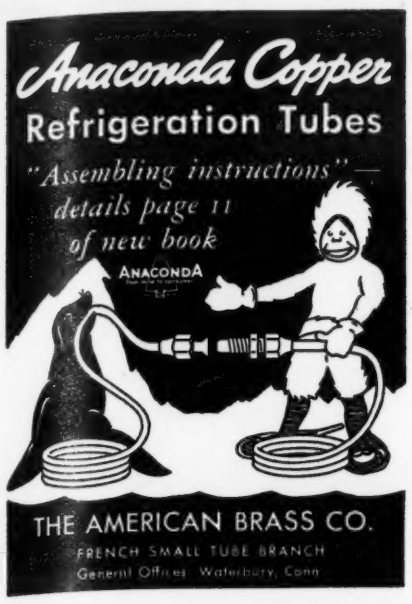
The symptoms of a stuck shut expansion valve will be a very low suction pressure as shown on the low pressure gauge. If the expansion valve is not feeding refrigerant into the system, the pressure in the evaporator will be much lower than that for which the automatic expansion valve was set.

The remedy is to remove and replace the defective valve.

Cause No. 4—Wrong expansion valve setting.

Every ice cream cabinet using an automatic expansion valve has a recommended expansion valve setting for proper operation. This setting may be obtained by checking with the data published by the manufacturer of the cabinet. The setting must be checked by installing a low pressure gauge on the system.

If the setting is found to be improper, it will be necessary to adjust the expansion valve to the proper setting. A check of the setting should be made when the equipment is in normal operation. By normal operation is meant that the temperature control has cut in normally and that the compressor has been running long enough after the idle period so that the pressure developed in the evaporator during the idle period has been removed, and the expansion valve closed.



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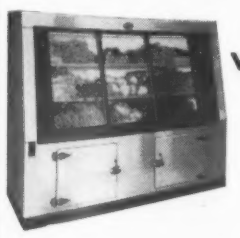
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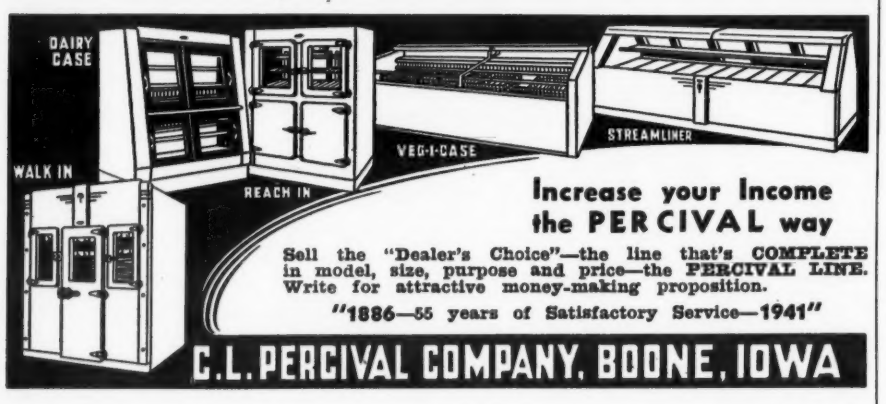

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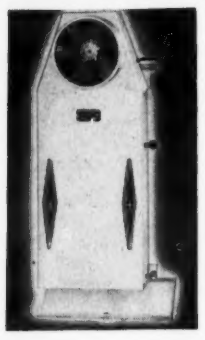
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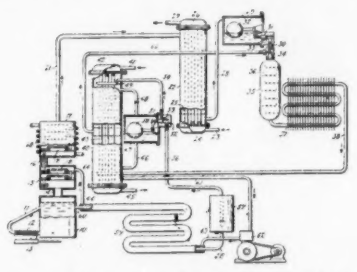
PATENTS

Weeks of July 8 & 15

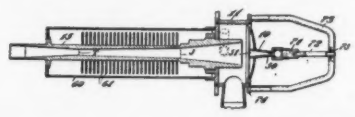
2,248,178. REFRIGERATION. Walter A. Kuenzli, Evansville, Ind., assignor to Servel, Inc., New York, N. Y., a corporation of Delaware. Application Sept. 2, 1937, Serial No. 162,079. 13 Claims. (Cl. 62—119.5.)



1. A method of refrigeration which includes flowing a plurality of refrigerant fluids to a common place of evaporation, and utilizing flow of one of said fluids to cause flow of another of said fluids in liquid phase.

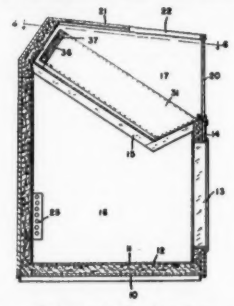
2,248,260. REFRIGERATION APPARATUS. Lyman F. Whitney, Cambridge, Mass., assignor by mesne assignments, to Stator Corp., a corporation of Rhode Island. Application Dec. 2, 1937, Serial No. 177,749. 6 Claims. (Cl. 230—95.)

1. An aspirator employing mercury vapor as a propellant for pumping refrigerant vapor from an evaporator to a condenser, comprising a mixing chamber



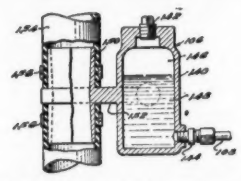
having a connection to receive vapor from the evaporator, a funnel having an inlet end communicating with the mixing chamber and having an outlet end from which vapor may pass, and a mercury-vapor nozzle communicating with the mixing chamber in axial alignment with the inlet end of the funnel.

2,248,286. REFRIGERATED DISPLAY CASE. Ernest E. Sanders, Detroit, Mich. Application Aug. 30, 1939, Serial No. 292,691. 4 Claims. (Cl. 62—89.5.)



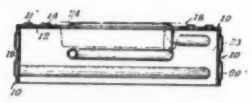
1. In a refrigerated display case having heat insulated walls enclosing its bottom and sides and divided into an upper and lower compartment, refrigerating means in the upper compartment, said means being in the form of a header having downwardly inclined parallel, relatively thin, wide members, said header and members dividing said upper compartment into a plurality of inclined bins.

2,248,304. THERMOSTATIC CONTROL MEANS. Christian R. Mueller, Highland Park, Mich. Application Dec. 17, 1936, Serial No. 116,438. 1 Claim. (Cl. 297—8.)



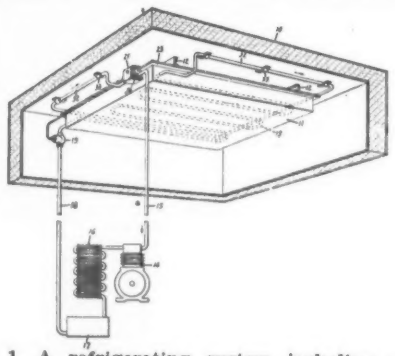
A thermostatic control means responsive to the temperature of a fluid flowing through a hose of a cooling system comprising a bellows, a thermostatic bulb arranged in adjacent relationship to said hose and operatively connected to said bellows, and a volatile fluid in said bellows and bulb, the combination of a metallic sleeve of relatively axially extended length inserted in said hose between adjacent ends of adjacent sections thereof forming means for clamping said ends in fluid-tight relation to each other and with the interior surface of said sleeve exposed to the direct flow of water therethrough.

2,248,467. REFRIGERATED DISPLAY FIXTURE FOR FOOD OR THE LIKE. Joseph Scilken, New York, N. Y. Application March 4, 1941, Serial No. 381,705. 19 Claims. (Cl. 62—126.)



1. A refrigerated display fixture of the character described having a top section comprising a plurality of plates each having a refrigerant passage therethrough, said top section including plates spaced from one another arranged longitudinally of the fixture and plates spaced from one another and connecting the said first mentioned plates to provide tray openings, all of the contiguously arranged of said plates connected edge to edge and their refrigerant passages connected in series.

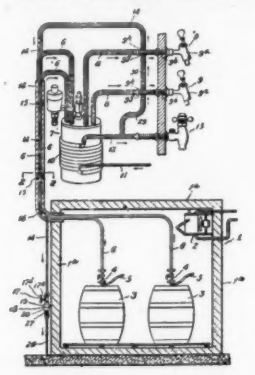
2,248,607. REFRIGERATING SYSTEM. La Mar S. Cooper, Erie, Pa., assignor to General Electric Co., a corporation of New York. Application Nov. 30, 1939, Serial No. 306,911. 5 Claims. (Cl. 62—8.)



1. A refrigerating system including a chilling unit for absorbing heat and a refrigerant evaporator for cooling said unit, a liquid line for admitting liquid refrigerant to said evaporator, a suction line for conducting vaporized refrigerant from said evaporator, a valve in said liquid line for controlling the admission of refrigerant to said evaporator, means including a thermal element adjacent said suction line and in thermal conducting relation therewith for actuating said valve, said thermal element being responsive primarily to the temperature of the refrigerant withdrawn through said suction line during the active periods of operation of said evaporator.

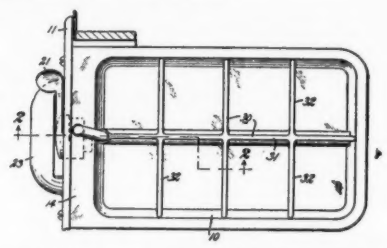
2,248,637. COOLING SYSTEM FOR DRAFT BEVERAGES. Howard B. McLaughlin, Detroit, Mich., assignor to Temprite Products Corp., Detroit, Mich., a corporation of Michigan. Application Dec. 29, 1939, Serial No. 311,457. 8 Claims. (Cl. 62—7.)

1. In a cooling system for draft beverages, the combination of a cooled chamber for the beverage containers; a beverage container therein; a beverage dispensing faucet outside the cooled chamber; means for conducting beverage from the container to the faucet comprising a conduit extending from the container through the wall of the said chamber to the region of the faucet; a water conduit extending from the region of the faucet along the beverage conduit and in heat-conducting connection there-



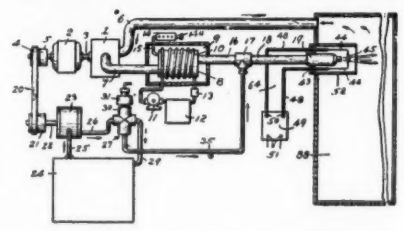
with to a point in the region of and outside the cooled chamber; a source of cold water connected to the inlet end of the water conduit.

2,248,680. ICE TRAY. Robert Lay Hallock, Larchmont, N. Y. Application May 12, 1934, Serial No. 725,234. 32 Claims. (Cl. 62—108.5.)



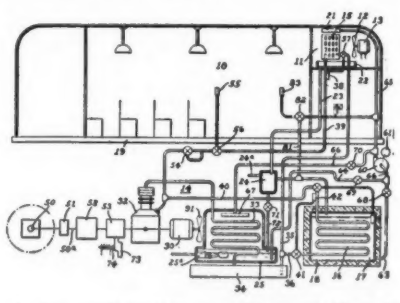
1. An ice tray comprising a tray body and a rubber division member therein, a rigid member forming part of said division member, and means for exerting force against said rigid member.

2,248,713. MEANS FOR AIR CONDITIONING. Frank W. Locke, Portland, Ore. Application June 20, 1938, Serial No. 214,701. 6 Claims. (Cl. 21—74.)



1. In air conditioning apparatus, means for treating the air in a chamber comprising air circulating and recirculating mechanism adapted to withdraw continuously a portion of the air in said chamber and reintroduce it; means for producing a jet of said air directed into said chamber; a pair of electrodes arranged adjacent but to the sides of the jet thus produced; an electric circuit connected to said electrodes; means for impressing across said electrodes an electrical potential sufficiently high to produce a continuous flaming arc extending across the path of said jet.

2,248,756. REFRIGERATING APPARATUS. Charles F. Henney, Dayton, Ohio, assignor to General Motors Corp., Dayton, Ohio, a corporation of Delaware. Application Sept. 13, 1935, Serial No. 40,421. 9 Claims. (Cl. 62—3.)



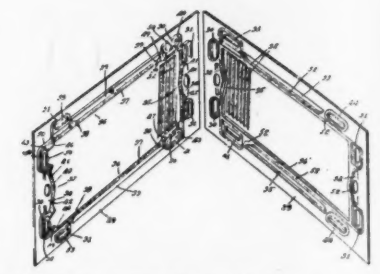
9. In combination, a refrigerant liquefying unit, a first named evaporator in refrigerant flow relationship with said unit and in thermal exchange relationship with a medium to be conditioned, a holdover tank, means for circulating holdover from said tank over said evaporator, a second named evaporator in refrigerant flow relationship with said unit and in thermal exchange relationship with holdover in said tank, and means automatically controlling the circulation of said holdover over said first named evaporator.

2,248,801. METHOD OF MAKING REFRIGERATING APPARATUS. Russell Bernt, Dayton, Ohio, assignor to General Motors Corp., Dayton, Ohio, a corporation of Delaware. Application May 25, 1938, Serial No. 210,016. 3 Claims. (Cl. 113—112.)

3. In the method of making a fluid tight heat exchanger by superimposing a corrugated sheet metal member upon another sheet metal member with a spelter material therebetween, the spelter material having a melting point lower than the melting point of the corrugated sheet metal members, and uniformly applying heat simultaneously over the entire exposed surfaces of the superimposed sheet metal members to melt the spelter material and bond the sheet metal members together around their peripheries and between the corrugations to form a plurality of closed passageways between the sheet metal members.

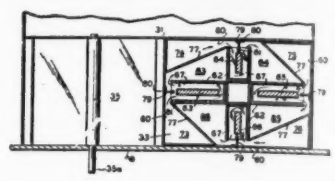
2,248,933. PLATE HEAT EXCHANGER. William Astle, Chicago, Ill. Application March 29, 1937, Serial No. 133,621. 6 Claims. (Cl. 257—245.)

1. In a heat exchange apparatus of the juxtaposed plate type, a substantially rectangular heat exchange plate provided with means on one side thereof for cooperation with an adjacent plate to define a film flow space between said



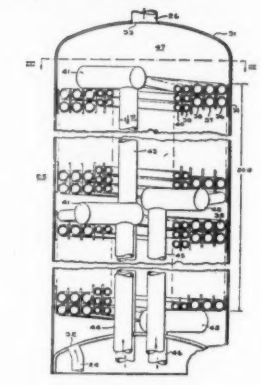
plates and provided with means on the opposite side thereof for cooperation with an adjacent plate to define a film flow space between said plates, said heat exchange plate having transfer port means adjacent all four corners thereof in communication with the flow space on one side of said heat transfer plate and out of communication with the flow space on the opposite side of said plates.

2,248,959. AIR CONDITIONING APPARATUS FOR ISOLATED SPACES. John N. H. Christman, Cleveland, and William A. Lintern, Brook Park Village, Ohio, assignors to The Lintern Corp., Cleveland, Ohio, a corporation of Ohio. Application Nov. 1, 1939, Serial No. 302,390. 5 Claims. (Cl. 219—39.)



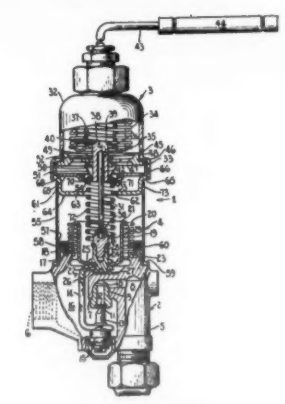
1. In an air conditioning apparatus comprising a duct having an air inlet, a power driven blower operatively within the duct constructed and arranged to force air received from the inlet in a predetermined direction in the duct, a heater unit in the duct including a chamber having an inlet communicating with a discharge portion of the blower.

2,249,074. REFRIGERATING APPARATUS. Edward R. Wolfert, Springfield, Mass., assignor to Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., a corporation of Pennsylvania. Application Feb. 26, 1938, Serial No. 192,693. 12 Claims. (Cl. 62—115.)



3. In refrigerating apparatus, the combination of a compressor, a condenser, an expansion device, a tank, a coil within the tank arranged to provide a vertical passage or passages for flow of refrigerant, means for circulating liquid to be cooled through the coil.

2,249,101. REFRIGERATING APPARATUS. Daniel D. Wile, Utica, N. Y., assignor to Detroit Lubricator Co., Detroit, Mich., a corporation of Michigan. Application May 14, 1938, Serial No. 207,906. 8 Claims. (Cl. 236—92.)



1. In a thermostatic expansion valve, a body member having an opening through a wall thereof, a pressure responsive member sealing said opening, an end member secured and sealed to said body member around said opening, a casing member, a thermostatic power element operating member positioned in said casing member.

(Concluded on Page 11, Column 1)

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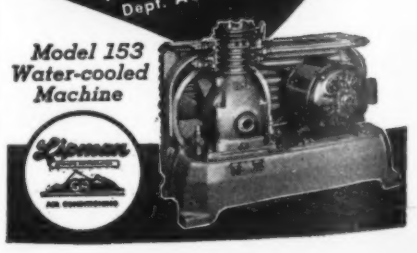
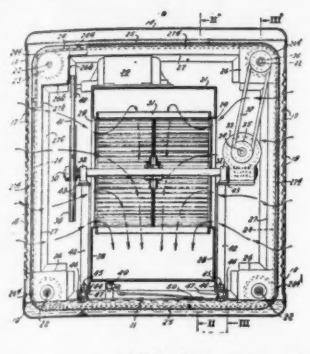


Patents (Cont.)

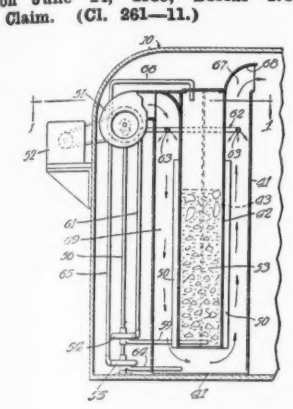
(Concluded from Page 10, Column 5)

2,249,159. AIR CONDITIONING APPARATUS. Tomlinson I. Moseley, San Francisco, Calif. Application March 18, 1940, Serial No. 324,552. 4 Claims. (Cl. 261—80.)



1. In air conditioning apparatus, a housing formed to contain a pool of air conditioning liquid, a moisture conveying air-pervious endless belt mounted in said housing for cyclic travel into and out of said pool to progressively submerge therein and moisten successive portions of said belt and translate the moistened belt web in its cyclic path above said pool.

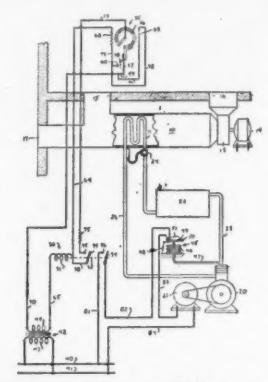
2,249,202. REFRIGERATING UNIT. Howard A. Glenn, Chicago, Ill. Application June 14, 1939, Serial No. 279,153. 1 Claim. (Cl. 261—11.)



In a refrigerator unit, a cabinet having walls of heat conducting material, a receptacle for containing a cooling medium, said receptacle having walls of heat conducting material, means for mounting said receptacle within said cabinet with the walls of the two spaced apart, vertical partitions forming a U-passage around said container.

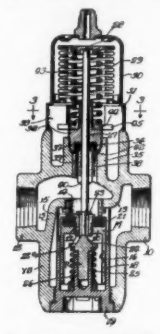
2,249,223. TEMPERATURE CONTROL SYSTEM. Harold T. Olson, Minneapolis, Minn., assignor to Minneapolis-Honeywell Regulator Co., Minneapolis, Minn., a corporation of Delaware. Application Oct. 26, 1938, Serial No. 237,041. 8 Claims. (Cl. 236—68.)

1. In a system of the class described, a space cooling means, thermostatic means in control of the space cooling means and having two pairs of contacts, said thermostatic means being arranged to increase the cooling effect of the cooling means when the temperature to which the thermostatic means is subjected rises to a predetermined value sufficient to cause engagement of a predetermined one of said pairs of contacts.



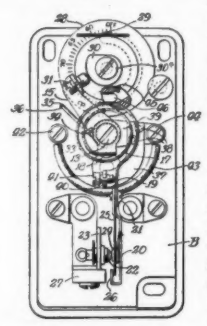
2,249,258. VALVE STRUCTURE. Burton E. Shaw, Bristol, Ind., assignor to Penn Electric Switch Co., Goshen, Ind., a corporation of Iowa. Application Aug. 22, 1938, Serial No. 226,133. 1 Claim. (Cl. 137—156.)

For use with a valve structure having a valve body and valve mechanism therein; means to operate said valve mechanism comprising a bellows exterior of said valve body, a pressure connection with said bellows whereby a predetermined pressure affecting said bellows will operate said valve mechanism, said valve body having a boss surrounded by a tubular portion of the valve body, two sides of which form projections spaced from each other and extending upwardly from said tubular portion, said bellows being mounted on said projections.

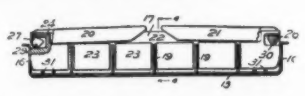


2,249,259. ROOM THERMOSTAT. Burton E. Shaw, Bristol, Ind., assignor to Penn Electric Switch Co., Goshen, Ind., a corporation of Iowa. Application May 13, 1940, Serial No. No. 334,872. 2 Claims. (Cl. 200—139.)

1. In a room thermostat, a supporting arm having a perforation for pivotally mounting the arm, said arm having an extension parallel to the pivot axis and terminating in a portion across the pivot axis having a second perforation for pivotally mounting said arm and aligning it at right angles to the pivot axis, a temperature responsive element mounted on said extension of said supporting arm, a switch arm carried by said temperature responsive element, switch contacts under control of said switch arm, a cam for pivotally adjusting said supporting arm.

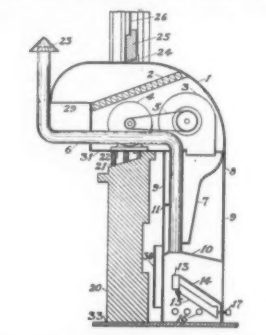


2,249,261. SHARP FREEZING MOLD. Richard M. Storer, Denver, Col. Application July 5, 1938, Serial No. 217,492. 15 Claims. (Cl. 62—108.5.)

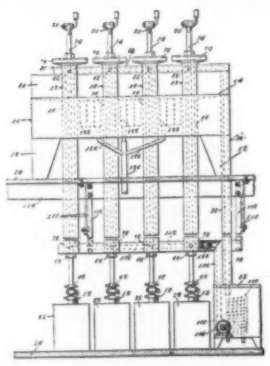


1. A grid for an ice tray, comprising a longitudinal support, transverse wall members thereon, a longitudinal wall member held adjacent one side of the support for limited movement relative thereto, another longitudinal wall member movably held at the opposite side of the support, the two longitudinal wall members having converging surfaces, a lever pivoted on the support, a pair of cams on the lever to be rotated by angular movement thereof and acting on the said longitudinal wall members to move them independently with reference to each other.

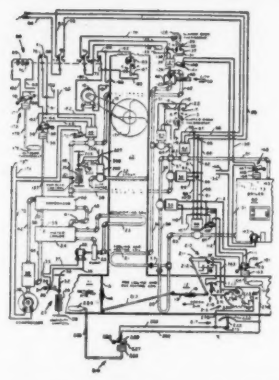
2,249,285. AIR CONDITIONING UNIT FOR THE RELIEF OF HAY FEVER AND ASTHMA. Howard E. Degler and Alvin H. Willis, Austin, Tex., assignors to Board of Regents of The University of Texas, Austin, Tex. Application Oct. 7, 1939, Serial No. 298,446. 1 Claim. (Cl. 126—110.)



2,249,299. COOLER AND WORK TABLE UNIT. Victor Rocco, Newburgh, N. Y. Application Oct. 3, 1938, Serial No. 233,076. 2 Claims. (Cl. 225—1.)

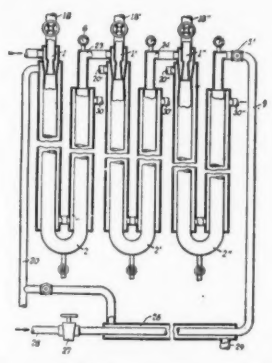


2,249,484. AIR CONDITIONING SYSTEM. Leo B. Miller and Henry F. Denver, Minneapolis, Minn., assignors to Minneapolis-Honeywell Regulator Co., Minneapolis, Minn., a corporation of Delaware. Application Dec. 17, 1934, Serial No. 757,850. 26 Claims. (Cl. 257—3.)



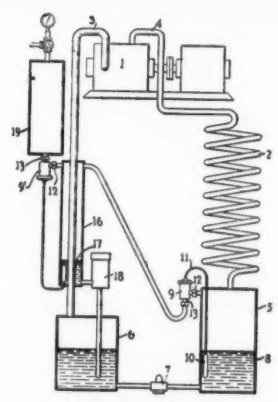
1. An air conditioning system of the class described, comprising, in combination, means to pass air to a space, first and second coils over which said air passes in the order named, a source of heating fluid, a source of cooling fluid.

2,249,621. METHOD OF AND APPARATUS FOR AIR CONDITIONING. Peter Schlumbohm, New York, N. Y. Application April 12, 1939, Serial No. 267,410. In Germany April 13, 1938. 3 Claims. (Cl. 62—135.)

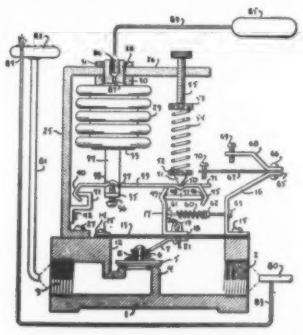


1. The method of air conditioning, comprising the step of compressing the air by means of propellant live steam into a tubular condensing space, the step of utilizing the air as pressure-equalizing gas to maintain throughout the tubular condensing space the pressure created at the inlet zone of the condensing space by said steam, the step of lowering the partial pressure of the water vapor at the end-zone of the condensing space by means of fresh cooling water.

2,249,622. REFRIGERATION CONDENSER CONTROL. Peter Schlumbohm, New York, N. Y. Application April 22, 1939, Serial No. 269,383. In Germany April 22, 1938. 10 Claims. (Cl. 62—170.)



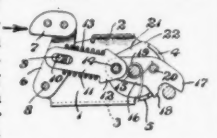
2,249,623. CONTROL VALVE. Daniel G. Taylor, Minneapolis, Minn., assignor to Minneapolis-Honeywell Regulator Co., Minneapolis, Minn., a corporation of Delaware. Application April 30, 1938, Serial No. 205,307. 13 Claims. (Cl. 137—139.)



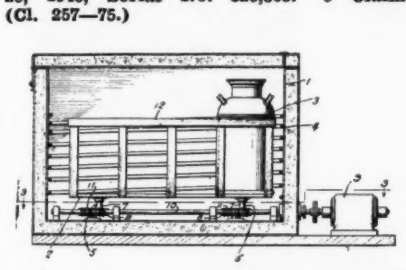
1. In a valve of the character described, in combination, valve actuating means comprising snap mechanism which is substantially in dead center position when the valve is closed, a condition responsive element for moving said snap mechanism.

2,249,644. REFRIGERATOR LATCH. Lloyd L. Anderson, Grandville, Mich., assignor to Winters & Crampton Corp., Grandville, Mich., a corporation of Michigan. Application Dec. 30, 1940, Serial No. 372,222. 12 Claims. (Cl. 292—122.)

8. A latch comprising, a housing, a latch bolt movably mounted on said housing, a pair of toggle levers connected to said latch bolt and said housing, a spring acting to extend said latch bolt, means for manually moving the toggle levers to retract the latch bolt and a brake connected with one of said toggle levers to retard movement of the latch bolt.



2,249,660. MILK COOLER. Cornelius Peeples Lee, Atlanta, Ga., assignor to Larkin Coils, Inc., Atlanta, Ga., a corporation of Georgia. Application March 25, 1940, Serial No. 325,863. 9 Claims. (Cl. 257—75.)



8. A cooler for milk and the like comprising, an insulated chamber, a platform to support cans of milk within the chamber, a plurality of pedestals supporting the platform in a horizontal plane, each pedestal rotatable on a vertical axis and being disposed eccentric to its axis, cooling coils disposed within the chamber around the platform, and driving mechanism to rotate the several pedestals in unison.

PATENTS

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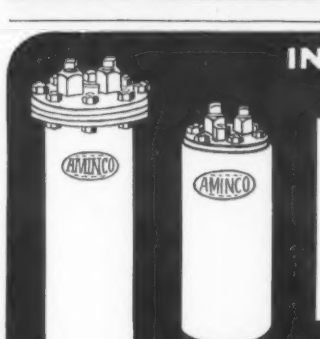
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'Adequate' Supply of Chlorine Promised

(Concluded from Page 1, Column 5)
chemical be filled ahead of non-defense contracts and also stipulates that producers must accept defense orders in preference to all non-defense calls. For the present it is not expected that the volume of defense orders will be greatly increased.

Meanwhile, manufacturers are free to make other deliveries if they have sufficient capacity to do so after meeting defense orders.

All defense orders which do not bear a higher preference rating are assigned a rating of A-10, thus placing them ahead of orders bearing a lower rating or no ratings.

Principal military uses for chlorine are in bleaching cotton linters for smokeless powder, and in the chemical warfare area, including the production of gasses and smoke screen materials.

Principal civilian uses, in the chemical industry, are for bleaching paper, for the production of dry-cleaning materials, anti-freeze compounds, and premium gasolines. About 25% of the production has been used recently for bleaching paper, and this use is now being restricted voluntarily by the industry.

In general, chlorine is not essential for the production of paper, but it is necessary for the bleaching of the paper produced. It is expected that certain paper products will be more affected than others. Restrictions in the amount of chlorine for bleaching will affect the coloring of writing papers, gloss and other papers for magazines, and high grade paper for books.

All Refrigerator Users To Be Hit By 10% Tax

(Concluded from Page 1, Column 2)
tion to household, commercial, and other industrial applications.

A tax of 10% also is imposed on the sale by the manufacturer of self-contained air conditioning units and certain principal components of such articles.

Covered in the proposed 10% tax on electrical appliances are: fans and air circulators, water heaters, flat irons, air heaters (not including furnaces), immersion heaters, heating pads and blankets, mixers, whippers, and juicers, household vacuum cleaners, and "appliances of the type used for cooking, warming, or keeping warm food or beverages for consumption on the premises." This would cover ranges, roasters, toasters, waffle-bakers, etc.

No Curb on Time-Pay Sales In 'Price' Bill

(Concluded from Page 1, Column 1)
ment credit proposal, said that none of the drafts had contained any reference to it.

Marriner S. Eccles, chairman of the Federal Reserve Board, and Leon Henderson, head of the Office of Price Administration and Civilian Supply, both of whom have advocated restriction on instalment buying to check inflation, had explored the matter in a conference with the President and in view of this and other similar conferences, it was anticipated that such a curb would be incorporated in the bill. However, when this did not materialize, Administration leaders indicated that measures for such control would be included in separate legislation.

Although doubting that Congress could impose a credit curb without "flagrant invasion" of the jurisdiction of states, Rep. Jesse Wolcott (Rep.), Michigan, ranking minority member of the Housing Banking and Currency Committee, agreed with Administration economists that price control would be ineffective against inflation without such a curb. This was concurred in by Rep. Fred L. Crawford (Rep.) Michigan, who thought it might be possible to enact the pending legislation in some form and amend it if it appeared to be unworkable.

This concern over instalment buying regulation, combined with demands by a farm bloc for minimum as well as maximum prices on agricultural products, made it appear that the hearings would be lengthy. Mr. Henderson was called as the first witness.

Sponsored in the House by Rep. Steagall and in the Senate by Sen. Glass, the bill gives President Roosevelt broad powers to establish ceiling prices on commodities on the basis of the level prevailing on July 29, with wages and common carrier and public utility rates being excepted. Control of rents is to apply to defense areas only.

Set Own Curb On Time Sales, Industry Urged

(Concluded from Page 1, Column 1)
months; refrigerators, attic fans, room coolers, coal stokers, oil burners, and furnace blowers—24 months; washers, ironers, sewing machines, and radios or radio-phonograph combinations listing at $150 or over—18 months; vacuum cleaners and radios or combination sets priced up to $150— 12 months.

"Combinations of any two or more of the above items take the terms of the appliance having the longest terms.

"These terms are not intended as bargaining terms, but rather as sound terms that should apply during the period of national emergency which now exists in this country."

Purpose of the Chicago meeting, which originally was scheduled for July 15 and later postponed to July 28 and then to Sept. 4, is to set up some form of voluntary instalment selling control in an effort to forestall government regulation. Complete details of the aims of this meeting were published in a story on page 27 of the July 16 issue of the NEWS.

Among the groups which have been invited to participate in this conference are: American Finance Conference, Associated Credit Bureaus of America, National Electrical Manufacturers Association, National Retail Dry Goods Association, National Retail Furniture Association, and National Retail Hardware Association.

OPM Puts Pig Iron On Priorities List

(Concluded from Page 1, Column 4)
During each month, beginning with September, each producer must set aside a specified quantity, the total amount forming an emergency pool out of which the Director of Priorities may make allocations for the following month to meet emergency neds. Customers must order pig iron on a special form.

Each producer is required to submit, before the fifteenth of each month, a proposed shipment schedule for the following month. No shipments may be made without the Priorities Director's approval.

Copper Placed Under 100% Priorities

(Concluded from Page 1, Column 2)
required by the manufacturer to fill orders at his customary rate of production. This restriction does not apply to deliveries of imported materials or to exports licensed by the Administrator of Export Control.

A preference rating of A-10 is assigned to all deliveries for defense orders not receiving a higher rating. The order requires acceptance of defense orders by dealers and manufacturers of copper products and copper-base alloys, and requires that these be given priority over non-defense demands.

Defense Heads Explain Priorities Problems

(Concluded from Page 1, Column 3)
rial and equipment necessary for the maintenance and repair of facilities employed in operation" in 26 industry or service classifications (among which refrigeration now is included) "shall be allocated to such use prior to the satisfaction of other competing civilian demands" and that material and equipment necessary for emergency maintenance and repair of such facilities shall be allocated to such use "prior to all other civilian requirements and prior to defense requirements to the extent consistent with the defense program as determined by the Office of Production Management."

OPM is at this time preparing orders that will take care of the materials and equipment required for the maintenance and repair of facilities employed in certain of the classifications listed in PM 649, but the first order of OPM carrying out allocation program of OPACS PM 649 will include only about a fourth of the lines mentioned in the OPACS program.

The reason given by OPM officials for not providing for all classifications mentioned in PM 649 is that OPM has neither the space nor the force to immediately administer and enforce allocation programs for all lines mentioned in PM 649.

OPM is developing a Defense Supplies Rating Plan which may be announced in the near future. Under this plan sufficient supplies will be made available for three months.

96 Firms Sign For All-Industry Show

(Concluded from Page 1, Column 5)
in the lower exhibition hall to locations on the Mezzanine floor.

Those changes have been made in part through the committee's announcement of its plans for the "institutional exhibits" to be staged next January (under the title, "The Antequarium") on the Mezzanine floor, and in a desire to be located in booths adjacent to this attraction.

Another influencing attraction, according to Chairman Benson, seems to be the single aisle arrangement on the Mezzanine floor which practically assures the exhibitors located in that section of a visit from every member of the trade inspecting the Mezzanine displays and attending "The Antequarium."

"The Antequarium" will contain two distinct types of exhibits. One will be made up of technical displays by government agencies interested in refrigeration and air conditioning —such as the U. S. Patent Office, Bureau of Standards, Department of Agriculture, etc.

The other type will be composed of early day models of present day products of the exhibitor firms. As complete a line of "ancient" types of compressors, expansion valves, coils, controls, fittings, etc., as can be assembled together with collections of early-day manufacturers' catalogs, sales literature, advertisements, and early issues of our leading trade papers will be displayed.

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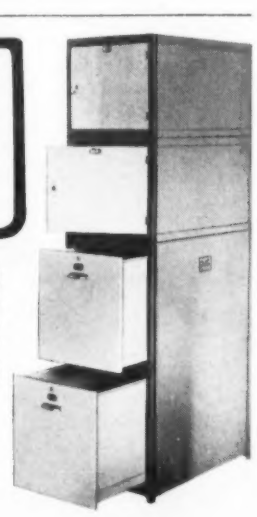

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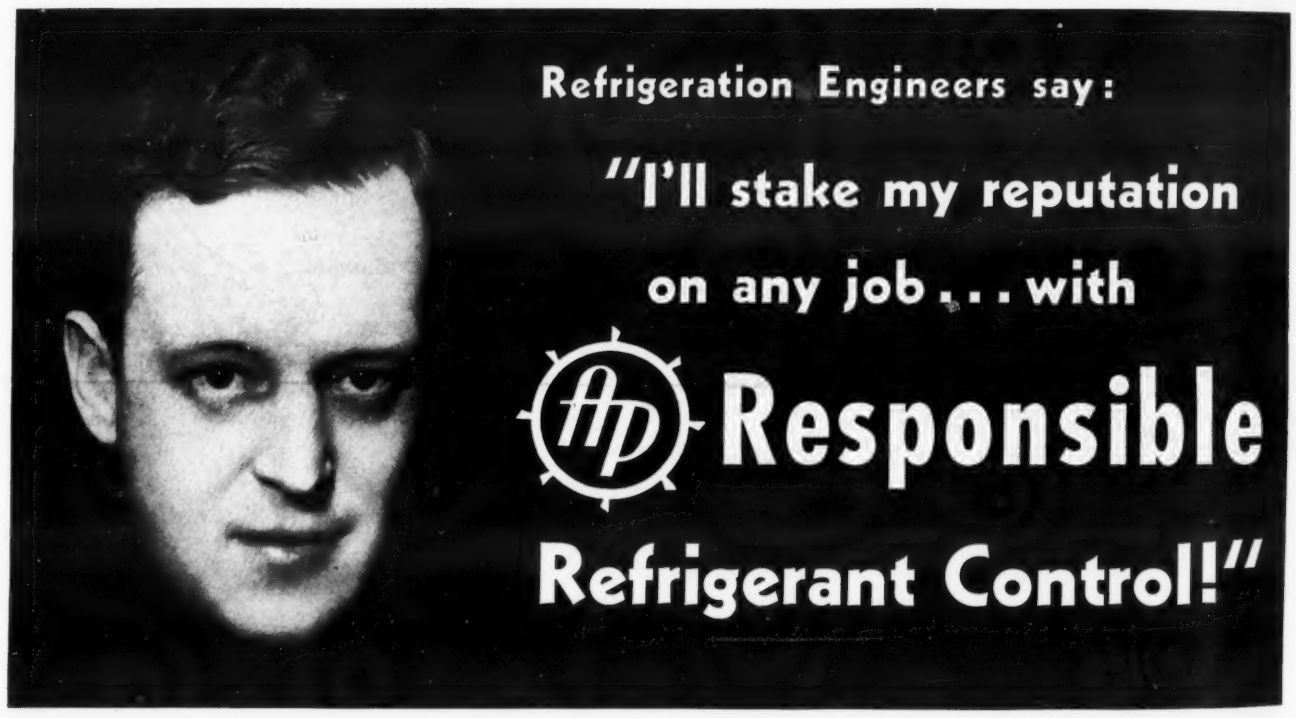

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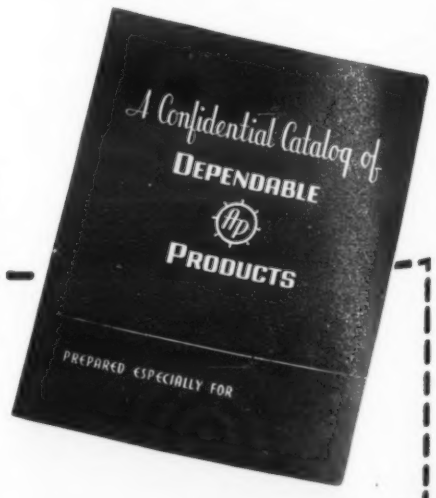

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